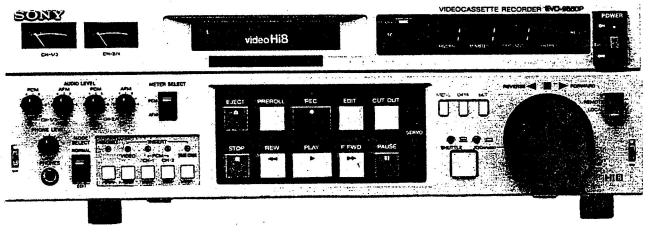
SONY

VIDEOCASSETTE RECORDER

EVO-9850P



Hi8

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SECTION 1
GENERAL DISCRIPTION

This section is extracted from operation manual.

About this Manual

This manual is provided as a guidebook for users of the Sony EVO-9850P Hi8 Videocassette Recorder. This section covers the purpose and organization of the manual. Reading this first will help you decide the other chapters to which you should devote to most time, depending on your experience of VTRs for business use.

Purpose of this Manual

This manual contains all the information you need to operate the EVO-9850P, including the names and functions of the component parts, details of settings and adjustments, and the procedures involved in recording, playback and editing. The EVO-9850P is a Hi8 VTR designed for use by a wide variety of users, from cable television stations to general business operators. Accordingly, this manual was written to be used by the same range of users, from experienced engineers to those users who have never used a professional VTR before. If you encounter any unfamiliar terms while reading this manual, consult the footnotes at the bottom of the page as well as the index and glossary found at the end of the manual.

Organization of this Manual

The following is a brief summary of the chapters and appendixes of this manual. Note, however, that the first page of each chapter also summarizes the contents of that chapter.

Chapter 1 Overview
Describes the principal features and functions of the unit.

Chapter 2 Location and Function of Parts and Controls
Gives the names and functions of the controls and other parts. Experienced users of VTRs for business use should be able to begin using the unit after reading this chapter. If this is the first time you have used this type of VTR, however, read through this chapter carefully to give yourself an overall understanding of the unit's features and how to use them.

Chapter 3 Setting Up the Unit
Describes connections and initial settings. Also described are safety precautions that you should be aware of.

Chapter 4 Recording and Playback
Describes the basics of recording and playback.

Chapter 5 Editing
Explains editing, how to set up two VTRs for automatic editing, and also how to perform simple manual editing.

Chapter 6 Maintenance
Explains error messages, cleaning and maintenance. Also included in this chapter is a troubleshooting guide.

About this Manual (Continued)

Appendixes
- Specifications
- Glossary

Index

Conventions used in the manual

Technical Terms
Technical terms are explained in the body of the text wherever they first appear, or at the foot of the page. You may also consult the glossary of terms at the end of the manual.

Cross Reference
Throughout the manual you will find italicized references to sections of the manual that contain supplementary information. Also printed italics indicates points about which you should consult the Sony dealer from whom you purchased this unit.

Important Notes
Be sure to read the sections of the manual marked **Note** . They explain points that you should be aware of to operate the unit correctly and prevent malfunctions.

Chapter 1
Overview

This chapter describes the special features that you should be aware of before operating the unit.

Introduction to the EVO-9850P ..... 1-3(E)
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Features of the EVO-9850P ..... 1-5(E)

Note on a recorder/player system connected with 8mm DUB connectors

In a system where a recorder and a player are connected with the 8mm DUB connectors, when a single monitor is connected only to the recorder for monitoring both the recorder's and player's playback pictures, the player pictures on the monitor will be disturbed during Jog/Shuttle mode playback.
If you want to obtain proper pictures, use two monitors, one for the recorder and the other for the player.

Note on the playback sound in Jog/Shuttle mode

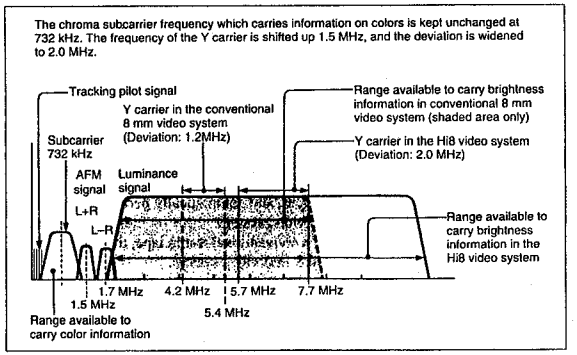
The playback sound in Jog/Shuttle mode may be muted depending on the search speed; the AFM sound is muted at slow speed, and the PCM sound at fast speed.

Introduction to the EVO-9850P

The EVO-9850P is a Hi8 VTR designed for use by cable television stations, business operators and others who require the high quality available from Sony's Hi8 format. By using the unit together with another EVO-9850P or other VTRs[1] (Hi8 VTR, Betacam SP VTR, U-matic VTR) and an automatic editing system, you can perform automatic editing.

Hi8 Video System

In the Hi8 video system that is a new 8-mm video system, Y (luminance) carrier frequency which carries information on brightness is shifted up 1.5 MHz, and the Y carrier deviation is changed to 2.0 MHz while the conventional deviation is 1.2 MHz. As a result, a wide bandwidth can be used for recording and playback (see the figure below), and a higher quality picture with horizontal resolution of 400 lines or more can be obtained.


The chroma subcarrier frequency which carries information on colors is kept unchanged at 732 kHz. The frequency of the Y carrier is shifted up 1.5 MHz, and the deviation is widened to 2.0 MHz.
Tracking pilot signal
Y carrier in the conventional 8 mm video system (Deviation: 1.2MHz)
Range available to carry brightness information in conventional 8 mm video system (shaded area only)
Subcarrier 732 kHz
Y carrier in the Hi8 video system (Deviation: 2.0 MHz)
AFM signal
Luminance signal
L+R
L–R
Range available to carry brightness information in the Hi8 video system
1.7 MHz
4.2 MHz
5.7 MHz
7.7 MHz
1.5 MHz
5.4 MHz
Range available to carry color information

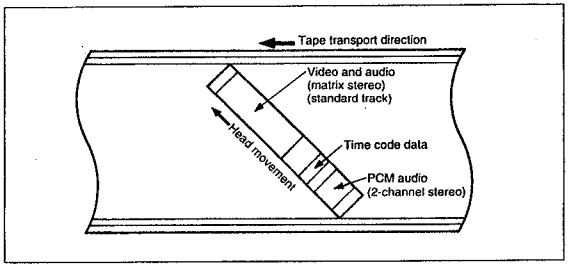
Recording in the Hi8 video system and conventional 8mm video system

1) **Connectable equipment:**
Beatacam SP VTR: PVW-2800P
U-matic VTR: VO-9850P
Hi8 VTR: EVO-9800P

Chapter 1

8-mm format video cassette tape

The video and audio information are recorded on an 8-mm format video cassette tape according to the following allocation. This unit allows recording of the time code as well as other information.



8-mm format video tape

Recording and playback with a Hi8 cassette tape

A Hi8 metal tape with large magnetic energy allows high-density recording, and makes it possible to record and play back a high-quality picture.

Cassette tape and automatic switching of recording/playback mode

When using a Hi8 cassette tape for recoding, this unit senses the detection holes on the cassette shell, and automatically performs recording in the SP (standard play) mode of Hi8 video system.
When using a conventional 8-mm tape, the recording is performed in the conventional 8-mm video system.
In playback, the unit can detect the system mode used in recording by verifying the recorded signal, and plays back the tape in appropriate mode.

Features of the EVO-9850P

Advanced editing functions

Electronic editing functions
Using two EVO-9850Ps and the RM-450CE editing control unit (not supplied), a high-quality automatic electronic editing system can be constructed.
The preroll button allows you to perform manual editing in insert mode or assemble mode. In addition, using the BVE-600 series or BVE-900 series editing control unit (not supplied) allows you to perform A/B roll editing[1] under the control of the 8-mm time code and built-in time base corrector (TBC)[2].

Quick access to edit points
The search dial gives you quick access to edit points. In SHUTTLE mode, you can play back pictures at any speed from 1/20 times to 13 times normal speed in the forward direction, and 13 times normal speed in the reverse direction. Still playback is also supported. In JOG mode, you can play back pictures at speeds from 0 to 1 times normal seed. Sound monitoring in JOG and SHUTTLE mode enables you to search for edit point easily.

Built-in 8-mm time code generator/reader
The built-in time code generator allows you to record 8-mm time codes together with video or audio signals. 8-mm time codes are read by the built-in time code reader during playback.

LED time counter
The unit's LED time counter displays the tape running time and 8-mm time code in hours, minutes, seconds and frames. This display is useful for checking recording times and the current tape position.

1) **A/B roll editing:**
Editing system using two or more player VTRs and a recorder VTR.

2) **Time Base Corrector (TBC):**
An electronic circuit that stabilizes the playback signal electronically. The time base corrector reduces the deterioration in picture quality when transmitting or copying playback signals.

Chapter 1

Ease of operation

Four channel audio
The unit has four input XLR connectors. You can select the channels for PCM[1] digital stereo recording or AFM[2] analog stereo recording by changing the switch position. The unit has two output XLR connectors for PCM audio and two output XLR connectors for AFM audio.

Noise reduction system
The digital luminance/chrominance noise reducer provides superior picture quality and makes life-like color reproduction possible.

Built-in time base corrector
The unit features a built-in time base corrector to compensate for timing irregularities. Thus, the unit outputs a stable playback video signal synchronized with the external reference signals. It can then supply those stable video signals to any kind of video equipment. The unit has switches and controls on its sub panel with which those video signals can be adjusted. Adjustment can also be done remotely by using the BVR-55P remote control unit (not supplied).

Easy-to-use front panel
All important controls have been clustered on the easy-to-use front panel. This panel is divided into an upper and lower part. The control panel can be tilted for the operator's convenience.

Setup menus
Settings can easily be made by using the front panel controls and menus displayed on the screen.

Standard 19-inch rack size
The unit can be mounted in an EIA standard 19-inch rack.

1) **PCM (Pulse Code Modulation) recording:**
The audio signal is converted to a digital signal and then recorded to the tape. PCM recording enables high quality sound with less distortion to be recorded and played back. This audio signal is recorded onto the tape's PCM tracks, so that you can later record an audio signal onto the PCM tracks of the tape where an AFM audio signal and video signal have already been recorded.

2) **AFM (Audio Frequency Modulation) recording:**
The audio signal is frequency-modulated and then recorded with an FM video signal.

Others

Remote control operation

The unit can be controlled from Sony editing control units such as the RM-450CE, BVE-600 and BVE-910 via a standard RS-422A serial interface.

Self-diagnostics

In the event of a malfunction, the unit performs a self-diagnostic test and displays any error code in the time counter display window on the front panel and on a video monitor connected to the MONITOR connector.

Dubbing connector

The unit is equipped with 8-mm video input and output dubbing connectors. You can use these connectors to perform editing and dubbing to another EVO-9850P with very little degradation in picture quality. Also, by using the U-matic output dubbing connector or S-VIDEO input and output connectors, you can perform editing and dubbing to other Betacam SP VTRs, S-VHS VTRs and U-matic VTRs.

External time code interface

The EVBK-110 EBU time code input/output board (not supplied) allows the system to convert the 8-mm time code currently being played back to the EBU[1] time code (LTC)[2]. Also, this interface can lock the built-in time code generator to the incoming EBU time code.

For more information on the EVBK-110 EBU time code input/output board, contact your Sony dealer.

1) **EBU:**
Abreviation for European Broadcasting Union. A professional broadcasting union established in Europe.

2) **LTC (Longitudinal Time Code):**
A time code recorded on a separate track at the edge of the tape.

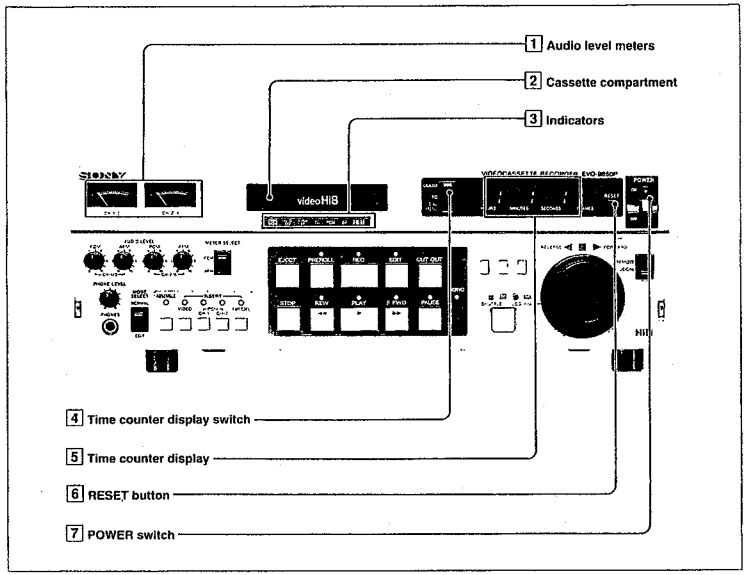
Chapter 2
Location and Function of Parts and Controls

This chapter gives a brief description of the purposes and functions of the principal parts of the unit.
If you have used a VTR for business use before, you should be able to begin using the unit after reading this chapter.
If this is the first time you have used this type of VTR, read through this chapter to familiarize yourself with the controls, then follow the procedures for setup and operation given in Chapter 3 and the subsequent chapters. Refer to this chapter to clarify the functions of the various controls.

Control Panel (Front) ..... 2-3(E)
Sub Panel (Inside of the Control Panel) ..... 2-9(E)
Connector Panel (Rear) ..... 2-14(E)

Control Panel (Front)

Upper Control Panel



Upper control panel

1 Audio level meters
Indicate the audio recording level in recording or EE[1] mode, and playback level in playback mode.

2 Cassette compartment
Insert cassettes here.

1) **EE mode (Electric-to-Electric mode):**
The input video signal, that has passed through the amplifier in the recorder, is displayed on the monitor. This is an EE mode picture, which enables the input signal to be checked on the monitor. The unit automatically enters EE mode when it is set to stop, F FWD or REW mode.

Control Panel (Front) (Continued)

3 Indicators

indicator
Lights when a cassette is in the cassette compartment.

AUTO OFF indicator
Lights at power-on when moisture has condensed inside the unit. While this indicator is lit, a cassette cannot be loaded.

STAND BY indicator
Lights while a tape is being threaded from or unthreaded to the cassette inside the unit.

TC (time code) indicator
Lights when an 8-mm time code is being recorded, or when a tape on which an 8-mm time code has been recorded is being played back.

PCM indicator
Lights when sound is being recorded onto the PCM tracks of a tape or during PCM audio playback.

SP (standard play) indicator
Lights when the power is turned on. This lamp goes off when a tape recorded in LP (long play) mode is played back.

Hi8 indicator
Lights when the power is turned on. This lamp goes off when a cassette that is not recorded in Hi8 format is loaded.

4 Time counter display switch
Selects what is displayed in the time counter display 5, as follows.

COUNTER: Displays the amount of tape travel in hours, minutes, seconds and frames.

TC: The item to be displayed depends on the setting of the U BIT/TIME switch on the sub panel.
When the U BIT/TIME switch is set to TIME: Displays the 8-mm time code.
When the U BIT/TIME switch is set to U BIT: Displays the user bit.

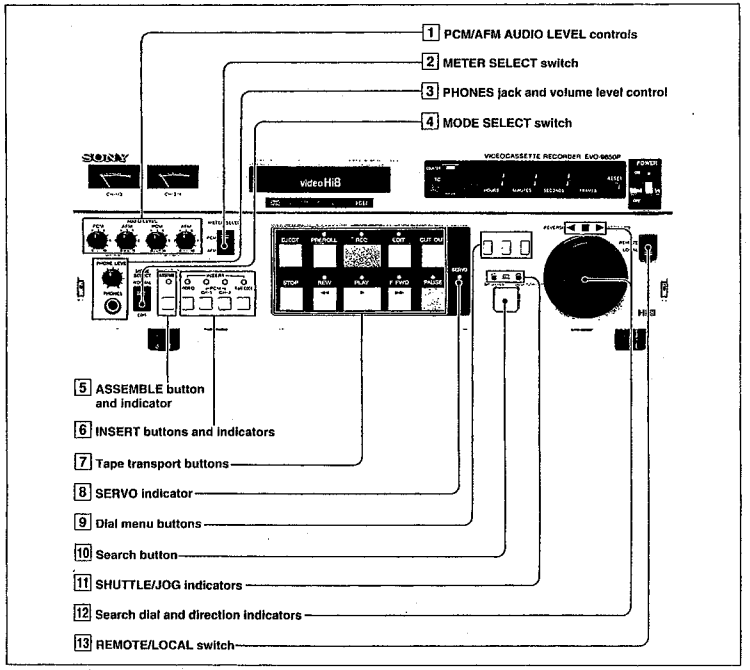
DIAL MENU: The unit enters the dial menu operation mode. The dial menu is displayed. In this mode, any other functions are deactivated.

5 Time counter display
Displays the item selected by the time counter display switch 4.

6 RESET button
When the time counter display switch 4 is set to COUNTER and the time counter display 5 indicates the amount of the tape travel, press this button to reset time counter display and display 0:00:00:00 on the time counter display.

7 POWER switch
Set this switch to ON to turn on the power. The audio level meter and time counter display will light.

Lower Control Panel


1 PCM/AFM AUDIO LEVEL controls
2 METER SELECT switch
3 PHONES jack and volume level control
4 MODE SELECT switch
5 ASSEMBLE button and indicator
6 INSERT buttons and indicators
7 Tape transport buttons
8 SERVO indicator
9 Dial menu buttons
10 Search button
11 SHUTTLE/JOG indicators
12 Search dial and direction indicators
13 REMOTE/LOCAL switch

Lower control panel

1 PCM/AFM AUDIO LEVEL controls

You can adjust the audio recording levels independently as shown below.

Functions of PCM/AFM AUDIO LEVEL controls

Control	Input signal to be adjusted	
	Input connector	Recording system
PCM CH-1	CH-1/L or CH-3/L	PCM
PCM CH-2	CH-2/R or CH-4/R	PCM
AFM CH-1	CH-1/L or CH-3/L	AFM
AFM CH-2	CH-2/R or CH-4/R	AFM

2 METER SELECT switch

Selects the audio whose level is to be displayed on the audio level meter.

PCM: Displays the recording level while the audio input signal is being recorded onto the PCM track. During playback, the meter displays the playback level.

AFM: Displays the recording level while the audio input signal is being recorded onto the AFM track. During playback, the meter displays the playback level.

Control Panel (Front) (Continued)

3 PHONES jack and volume level control

Connect 8-ohm stereo headphones to monitor the signal selected with the MONITOR SELECT switch. Adjust the volume with the volume level control.

4 MODE SELECT switch

EDIT: Set the switch to this position to perform editing. The unit is always synchronized with the input video signal regardless of the operation mode (record, playback, etc.)

NORMAL: Set the switch to this position in playback mode. The unit is synchronized with the internally-generated reference signal.

Note

When you play back a cassette with this switch set to EDIT, without inputting a reference video signal, vertical jitter may appear on the reproduced picture. Should this happen, correct the problem by inputting a reference video signal or changing the MODE SELECT switch setting from EDIT to NORMAL.

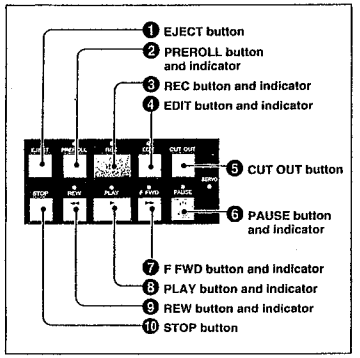
5 ASSEMBLE button and indicator

Press this button to select ASSEMBLE edit mode. The indicator above the button will light. Press again to cancel ASSEMBLE edit mode.

6 INSERT buttons and indicators

In INSERT edit mode, press the VIDEO, PCM CH-1, PCM CH-2 or TIME CODE buttons to select the desired input signal. The indicator above the selected button lights. To cancel, press the button again. The light will go off.

7 Tape transport buttons


1 EJECT button
2 PREROLL button and indicator
3 REC button and indicator
4 EDIT button and indicator
5 CUT OUT button
6 PAUSE button and indicator
7 F FWD button and indicator
8 PLAY button and indicator
9 REW button and indicator
10 STOP button

Tape transport buttons

1 EJECT button

Press this button to eject the cassette.

2 PREROLL button and indicator

When you press this button, the tape is rewound for 5 seconds then stops in pause mode.

3 REC (record) button and indicator

Press this button together with the PLAY button to start recording.
Pressing the REC button allows you to monitor the picture and sound in EE mode, as long as you keep the button held down.

4 EDIT button and indicator

Press this button together with the PLAY button to start editing.
Pressing the EDIT button allows you to monitor the picture and sound of the input signals selected with the ASSEMBLE or INSERT buttons in EE mode, as long as you keep the button held down.

❺ CUT OUT button
Press this button to finish ASSEMBLE or INSERT editing. Edit mode is canceled, but the tape continues to run in playback mode. When you press this button in record mode, record mode is canceled. When you press this button in pause mode after preroll, edit mode is canceled.

❻ PAUSE button and indicator
Press this button to stop the tape momentarily. To restart the tape, press this button again. When you press this button during recording, the EE picture is displayed. When you press this button during playback, a still picture is displayed. When you press the PLAY, F FWD, REW or search buttons during pause mode, pause mode will be released and the tape will run in the mode corresponding to the pressed button.

❼ F FWD (fast forward) button and indicator
Press this button to fast forward the tape. You can monitor the picture and the sound in EE mode during fast forwarding.

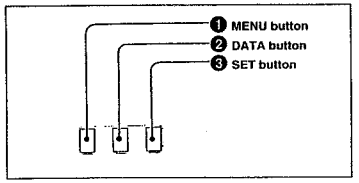
❽ PLAY button and indicator
Press this button to start playback.
Press the PLAY button together with the REC or EDIT button to begin recording or editing.

❾ REW (rewind) button and indicator
Press this button to rewind the tape. You can monitor the picture and the sound in EE mode during rewinding.

❿ STOP button
Press this button to stop the tape transport completely. You can monitor the picture and the sound in EE mode during stop mode.

8 SERVO indicator
During playback, lights when the drum servo and capstan servo lock.

9 Dial menu buttons
Use the following dial menu buttons only when you set the time counter display switch to DIAL MENU to change the settings on the menu.



Dial menu buttons

❶ MENU button
While holding down this button, turn the search dial in JOG mode to select the menu item.

❷ DATA button
While holding down this button, turn the search dial in JOG mode to set the data.

❸ SET button
Press this button after changing one or more items in menu. The changes will be saved.

10 Search button
Press this button to place the unit in search mode. Searching with the search dial in JOG or SHUTTLE mode is now possible.
You can enter search mode without pressing the search button. Refer to dial menu 209 of the enhanced menu on page 3-22(E) for more information.

11 SHUTTLE/JOG indicators
The SHUTTLE indicator lights when the unit is in SHUTTLE mode. The JOG indicator lights when the unit is in JOG mode. To change the mode, press the search dial.

Chapter 2

Control Panel (Front) (Continued)

12 Search dial and direction indicators
Functions as a search dial to quickly locate edit points. Or, functions as a selector for the dial menu operation, according to the setting of the time counter display switch.

Function of the search dial

Time counter display switch setting	Function of the search dial
COUNTER or TC	Search for edit point
DIAL MENU	Dial menu operation

The details of the functions are as follows.

Search for edit point
Set the counter display switch to COUNTER or TC, then press the search button. You can search for an edit point by rotating the search dial to change the playback speed and direction in JOG or SHUTTLE mode. Press the dial to toggle between SHUTTLE or JOG modes. The SHUTTLE or JOG indicator will light to indicate which mode you have selected.

Search dial function in SHUTTLE/JUG mode

Mode	Dial function
SHUTTLE mode	Turn the dial to a desired angle to select a playback speed from 1/20 to 13 times normal speed in the forward direction and 13 times normal speed in the reverse direction. The speed at the center position is 0, corresponding to a still picture.
JOG mode	Rotate the dial at a desired speed to select any speed between 0 and ±1 times normal speed. Unlike in SHUTTLE mode, you will not feel any detents as you rotate the dial.

The tape running direction is indicated by the direction indicators.
▷: lights when you rotate the dial clockwise to run the tape forward.
◁: lights when you rotate the dial counterclockwise to run the tape in reverse.
□: lights while the dial is stopped.

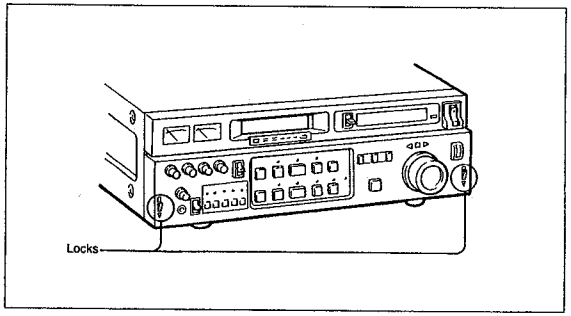
Dial menu operation
Set the counter display switch to DIAL MENU.
Rotate the dial while holding down the MENU button or the DATA button to set the characters or numbers on the display.
For more information about the dial menu operation, see "System Setup from Menu" on page 3-17(E).

13 REMOTE/LOCAL switch
Set this switch to control the unit either locally or from the equipment connected to the REMOTE 1 connector on the rear panel.
REMOTE: The unit is controlled from an external unit connected to the 9-pin REMOTE 1 connector on the rear panel. Setting this switch to REMOTE disables all the tape transport buttons on the control panel, except for the STOP and EJECT buttons.
LOCAL: The unit is controlled from its control panel.

Sub Panel (Inside the Control Panel)

How to open and tilt the lower control panel

To change the settings of the switches on the sub-panel, inside the control panel, open the lower control panel as illustrated. You can tilt the control panel up through 30°, 60° or 90°.

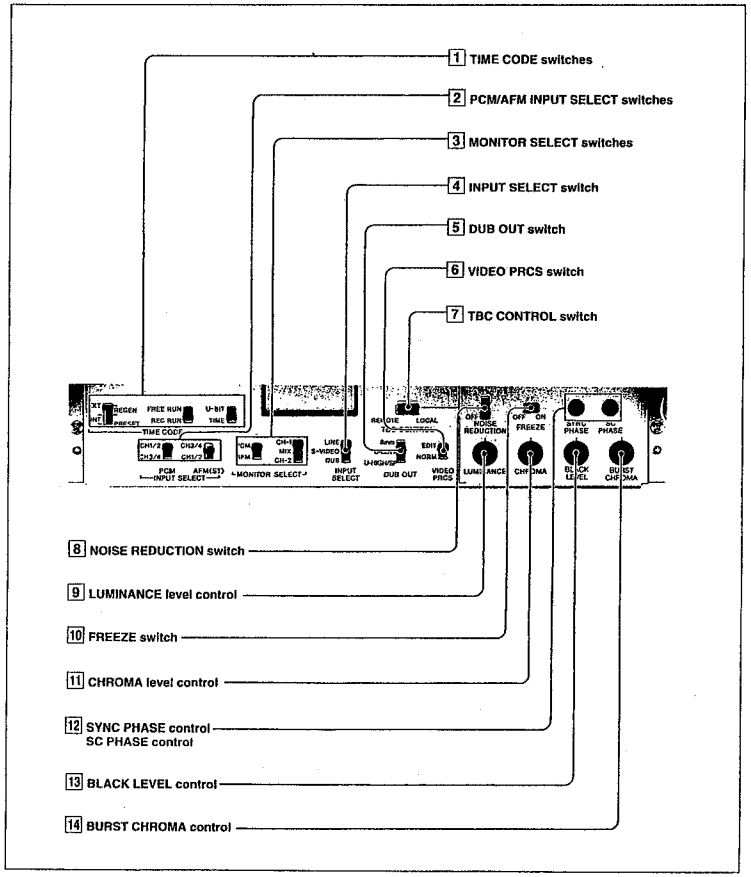


Opening the lower control panel

1 Push down the locks on the both sides simultaneously so that the lower half of the front panel moves out.

2 Tilt the panel up and lock it at 30°, 60° or 90°. Check that both sides are firmly locked.

Sub Panel (Inside the Control Panel) (Continued)



Sub panel

Sub Panel (Inside the Control Panel) (Continued)

1 TIME CODE switches

EXT/INT (external/internal) switch

EXT: Set the switch to this position to use the input from the TIME CODE IN connector. This is only available when the EVBK-110 EBU time code input/output board (not supplied) is installed.

INT: Set the switch to this position to use the built-in time code generator.

Factory setting: INT

REGEN (regenerate)/PRESET switch

REGEN: Regenerate the initial setting for the built-in time code generator, using the input external time code or the played back time code read by the built-in time code reader.

PRESET: Preset the initial value for the time code generator, using the control panel or the value input from a remote control unit connected through the 9-pin REMOTE 1 connector.

Factory setting: PRESET

FREE RUN/REC RUN (generator operation mode) switch

FREE RUN: The time code advances regardless of the unit's operating mode, until the power is turned off.

REC RUN: The time code advances only during recording. This setting is valid only if the EXT/INT switch is set to INT, and the REGEN/PRESET switch is set to PRESET.

Factory setting: FREE RUN

U-BIT/TIME (user bit/8-mm time code display) switch

This switch determines whether the time code or user bits will be displayed in the time counter display.

U-BIT: Set the switch to this position to display the user bits on the tape, read by the built-in time code reader or the user bits set for recording .

TIME: Set the switch to this position to display the 8-mm time code on the tape read by the built-in time code reader or the time code set for recording.

Factory setting: TIME

2 PCM/AFM INPUT SELECT switches

Selects the recording method for the audio signal input to each channel of the four AUDIO INPUT connectors.

PCM CH1/2 CH3/4 switch

Selects the channel for PCM recording. Set the switch to CH1/2 when recording signals input to the AUDIO INPUT CH-1/L and CH-2/R connectors. Set the switch to CH3/4 when recording signals input to the AUDIO INPUT CH-3/L and CH-4/R connectors.

AFM CH3/4 CH1/2 switch

Selects the channel for AFM recording. Set the switch to CH3/4 when recording signals input to the AUDIO INPUT CH-3/L and CH-4/R connectors. Set the switch to CH1/2 when recording signals input to the AUDIO INPUT CH-1/L and CH-2/R connectors.

3 MONITOR SELECT switches

Select the sound to be output from the PHONES connector on the front panel and the MONITOR connectors on the rear panel.

PCM/AFM switch

PCM: Set the switch to this position to monitor PCM-recorded sound.

AFM: Set the switch to this position to monitor AFM-recorded sound.

Factory setting: PCM

CH-1/MIX/CH-2 switch

Selects the sound to be output from the PHONES connector and MONITOR connectors. The recording mode of the output sound depends on the setting of the PCM/AFM switch.

CH-1: The sound recorded on the PCM channel 1 or the AFM left channel

MIX: Mixed sound recorded on the PCM channel 1 and 2 or on the AFM left and right channels

CH-2: The sound recorded on the PCM channel 2 or the AFM right channel.

Chapter 2

4 INPUT SELECT switch

Selects the video signal to be recorded.

LINE: Set the switch to this position to record the video signal input via the VIDEO IN connector.

S-VIDEO: Set the switch to this position to record the video signal input via the S-VIDEO connector.

DUB: Set the switch to this position to record the video signal input via the DUB IN (8-mm) connector.

5 DUB (dubbing) OUT switch

Set this switch according to the type of the VTR connected to the DUB OUT connector.

8 mm: Set the switch to this position to connect the EVO-9850P.

U-LOW: Set the switch to this position when connecting a U-matic VTR for recording in low-band mode.

U-HIGH/SP: Set the switch to this position when connecting a U-matic VTR for recording in high-band mode or an SP mode.

6 VIDEO PRCS (process) switch

Selects the playback video signal characteristics during playback, editing and dubbing.

EDIT: Set the switch of the player EVO-9850P to this position when editing and dubbing, when the recorder VTR is 8 mm VTR. The video signal is automatically adjusted to obtain the optimum dubbing picture quality.

NORM: Set the switch to this position when the recorder VTR is the one other than 8 mm VTR such as Betacam SP VTR and U-matic VTR, or when monitoring the played back picture.

Note

Horizontal color signal noise will appear when playing back a cassette with this switch set to EDIT. Also, the NOISE REDUCTION switch 8 is disabled. Set this switch to NORM in any mode other than editing or dubbing.

The setting of CNR, YNR and luminance enhancer of the VTR is selected depending on the settings of the VIDEO PRCS switch, NOISE REDUCTION switch 8 and the dial menu 228/229. For details, see "Setting of CNR, YNR and luminance enhancer" on page 2-13(E) and "Contents of Enhanced Menu" on page 3-22(E).

7 TBC (time base corrector) CONTROL switch

LOCAL: Set the switch to this position to control the time base corrector from the sub-panel.

REMOTE: Set the switch to this position to control the time base corrector from a BVR-55P remote control unit (not supplied).

8 NOISE REDUCTION switch

Selects the noise reduction level of the digital noise reduction circuits during playback.

OFF: The digital luminance/chrominance noise reduction circuits do not work.

1: Low chrominance noise reduction level

2: High chrominance noise reduction level

The setting of CNR, YNR and luminance enhancer of the VTR is selected depending on the settings of the VIDEO PRCS switch 6, NOISE REDUCTION switch and the dial menu 228/229. For details, see "Setting of CNR, YNR and luminance enhancer" on page 2-13(E) and "Contents of Enhanced Menu" on page 3-22(E).

9 LUMINANCE level control

Adjusts the luminance output level within a range of ±3dB with this control.

10 FREEZE switch

ON: Set the switch to this position to monitor a frame of the moving picture as a still picture during playback. The frame being played back when you set the switch to ON is sent to memory and output as a still picture.

OFF: Set the switch to this position to release the FREEZE mode and output the playback picture again.

11 CHROMA level control

Adjusts the chroma output level within a range of ±3dB.

12 SYNC PHASE control

SC (subcarrier) PHASE control

Use these controls when you need to synchronize the unit's output phase with a reference signal, or when you wish to achieve special effects such as fades or dissolves when using the unit with an editing control unit and other VTRs.

SYNC PHASE control

Adjusts the output sync phase within –1 to +3µs with respect to the reference signal input to the unit.

SC PHASE control

Adjusts the output subcarrier phase within 360 degrees with respect to the reference signal input to the unit.

13 BLACK LEVEL control

Adjusts the black level of the output video signal from 0 to 0.1 V.

14 BURST CHROMA control

Adjusts the output hue (burst and chroma relative phase) within ±30 degrees.

The BURST CHROMA control does not adjust the burst phase of the output signal relative to that of the reference signal.

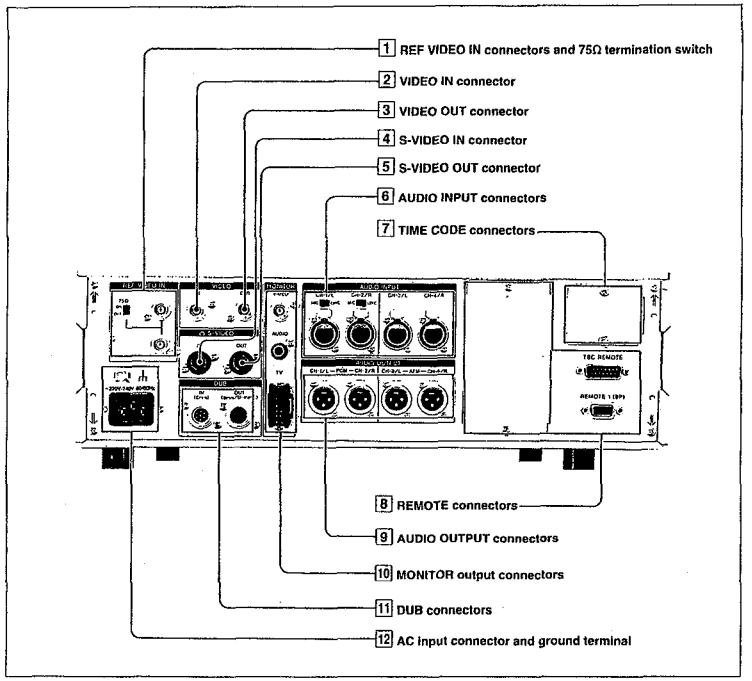
Setting of CNR, YNR and luminance enhancer

The CNR, YNR and luminance enhancer are automatically set depending on the setting of the VIDEO PRCS switch, NOISE REDUCTION switch and dial menu 228/229. The following table shows the relation between the switch and menu settings and each operation mode of VTR CNR, YNR and luminance enhancer.

Automatic setting of CNR, YNR and luminance enhancer

Switch & menu setting				VTR mode		
Switch		Dial menu				
VIDEO PRCS	NOISE REDUCTION	YNR (228)	Enhancer (229)	YNR	CNR	Luminance enhancer
NORM	2	ON	ON	ON	HIGH	ON
	1			ON	LOW	
	OFF			OFF	OFF	
	2	ON	OFF	ON	HIGH	OFF
	1			ON	LOW	
	OFF			OFF	OFF	
	2	OFF	ON	OFF	HIGH	ON
	1				LOW	
	OFF				OFF	
EDIT				OFF	OFF	OFF

Connector Panel (Rear)


1 REF VIDEO IN connectors and 75Ω termination switch
2 VIDEO IN connector
3 VIDEO OUT connector
4 S-VIDEO IN connector
5 S-VIDEO OUT connector
6 AUDIO INPUT connectors
7 TIME CODE connectors
8 REMOTE connectors
9 AUDIO OUTPUT connectors
10 MONITOR output connectors
11 DUB connectors
12 AC input connector and ground terminal

Connector panel

1 REF VIDEO IN (reference video signal, VBS input) connectors (BNC type) and 75Ω termination switch

Connect the reference video signal. The second connector is used for loop-through output. When both connectors are used for a bridge connection, set the 75Ω termination switch to OFF. Otherwise, set the switch to ON.

2 VIDEO IN connector (BNC type)

Connect composite video signals.

3 VIDEO OUT connector (BNC type)

Connect to a VTR or monitor video input connector to output composite video signals.

4 S-VIDEO IN connector (4-pin)

Input separate Y and C signals by connecting to the S-VIDEO output connector of another VTR or video equipment.

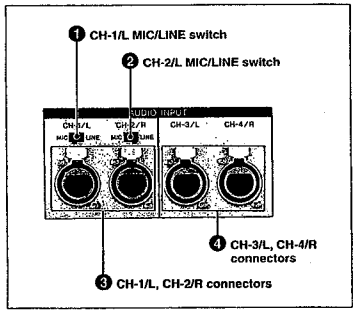
5 S-VIDEO OUT connector (4-pin)

Outputs separate Y and C signals. Can be connected to any VTR or monitor with an S-VIDEO input connector.

Connector Panel (Rear) (Continued)

6 AUDIO INPUT connectors

The unit is equipped with four audio input connectors. When there are two audio source systems, connect each system to CH-1/L and CH-2/R, and to CH-3/L and CH-4/R respectively. You can select the audio recording method (PCM or AFM) for channels 1 and 2, and channels 3 and 4 by setting the INPUT SELECT switch on the sub panel.



Audio input connectors

1 CH-1/L MIC (microphone)/LINE switch

Selects the signal input to the CH-1/L connector.

MIC: Set the switch to this position to connect a microphone.

LINE: Set the switch to this position to connect a player VTR or audio equipment.

2 CH-2/L MIC (microphone)/LINE switch

Selects the signal input to the CH-2/R connector.

MIC: Set the switch to this position to connect a microphone.

LINE: Set the switch to this position to connect a player VTR or audio equipment.

3 CH-1/L, CH-2/R connectors (XLR 3-pin)

Connect audio signals from a player VTR, audio equipment or microphones.

4 CH-3/L, CH-4/R connectors (XLR 3-pin)

Connect audio signals from a player VTR or audio equipment.

7 TIME CODE connectors (not supplied)

Use these connectors to input and output the LTC of EBU time code when the EVBK-110 EBU time code input/output board is installed.

TIME CODE IN connector (BNC type)
Inputs the LTC from the external time code generator or another VTR. The built-in 8-mm time code generator is locked to the input LTC.

TIME CODE OUT connector (BNC type)
Outputs the LTC, converted from the 8-mm time code by the unit .

8 REMOTE connectors

TBC REMOTE connector (15-pin)
To remotely control the built-in time base corrector, connect the BVR-55P remote control unit (not supplied) to this connector.

Note

Always turn off the unit's power before connecting remote control equipment to the TBC REMOTE connector.

REMOTE 1 connector (9-pin)
Connect a Sony editing control unit such as an RM-450CE using a 9-pin remote control cable, to perform editing.

REMOTE 2 connector (33-pin) (not supplied)
Connect a Sony editing control unit with a 33-pin remote connector such as the RM-440 when the BKU-703A 33-pin editing interface (not supplied) is installed.

To connect the BKU-703A
Remove the top plate of the EVO-9850P. The SST-2 board is the large board on the connector panel side.
Connect the 5-pin, 12-pin and 8-pin connectors of the BKU-703A to CN005 (5-pin), CN319 (12-pin) and CN-320 (8-pin) connectors of the SST-2 board.
For details, consult your Sony dealer.

9 AUDIO OUTPUT connectors

PCM CH-1/L, CH-2/R (PCM audio output) connectors (XLR 3-pin)
Outputs the audio signal recorded on the PCM tracks.

AFM CH-3/L, CH-4/R (AFM audio output) connectors (XLR 3-pin)
Outputs the audio signal recorded on the AFM tracks.

10 MONITOR output connectors

VIDEO output connector (BNC type)
Connect to the video input connector of a color monitor. Information superimposed on a picture in dial menu operation mode will also be output.

AUDIO output connector (phono jack)
Outputs the audio signal selected using the MONITOR SELECT switch on the sub panel.

TV monitor connector (8-pin)
Connect to the VTR connector of a color video monitor, using the 8-pin connecting cable (not supplied), to output audio and video signals, including data superimposed with the dial menu.
During playback, you will hear the sound recorded on the channel selected using the MONITOR SELECT switch.

11 DUB (dubbing input/output) connectors

DUB IN (8 mm) connector (7-pin)
Use to input the video signal to be dubbed from another EVO-9850P Hi8 video recorder.
Connect to the DUB OUT connector of the other EVO-9850P by using the 7-pin dubbing cable (not supplied).

DUB OUT (8 mm/U-matic) connector (7-pin)
Outputs the signal selected using the DUB OUT switch on the sub panel.
Connect to the DUB IN connector of the other EVO-9850P or the DUB IN connector of a U-matic VTR by using the 7-pin dubbing cable (not supplied).

12 AC input connector and ground terminal

~ 220 V–240 V 50/60 Hz: Connect an AC power source using the AC power cord (supplied).

⏚ (ground): Connect to ground line.

Chapter 3
Setting Up the Unit

This chapter explains necessary safety precautions, making connections, and the proper handling of cassettes.

Precautions ..... 3-3(E)
- Safety Precautions ..... 3-3(E)
- Handling Precautions ..... 3-3(E)

Connections ..... 3-4(E)
- Basic Connections ..... 3-4(E)
- Editing System Connections ..... 3-8(E)
- Reference Video Signal Connections ..... 3-13(E)

Rack Mounting ..... 3-16(E)

System Setup from Menu ..... 3-17(E)
- Contents of Basic Menu ..... 3-17(E)
- Changing Menu Settings ..... 3-18(E)
- Contents of Enhanced Menu ..... 3-21(E)

Cassettes ..... 3-23(E)
- Recommended Cassettes ..... 3-23(E)
- Inserting and Ejecting Cassettes ..... 3-25(E)
- Preventing Accidental Erasure ..... 3-27(E)
- Handling and Storing Cassettes ..... 3-27(E)

Precautions

Safety Precautions

Power supply
- Operate the unit only with a power source specified in "Specifications" on page A-5(E).
- Do not drop or place heavy objects on the power cord. If the power cord is damaged, turn off the power immediately. It is dangerous to use the unit with a damaged power cord.
- Disconnect the power cord from the AC outlet by grasping the plug, not by pulling the cord.

Keep foreign objects out of the cabinet
Dropping flammable or metal objects into the cabinet, or spilling liquids nearly can lead to accidents.

In case of malfunctions
If you notice any unusual sound, smell or smoke, turn off the power immediately, disconnect the power supply and contact your Sony dealer.

Handling Precautions

Location
Do not store or use the unit under any of the following conditions:
- In excessive heat or cold; permissible temperature range: 5° to 40°C (41°F to 104°F).
- In direct sunlight or near heaters. Remember that the temperature inside a locked automobile in summer can rise as high as 50°C (122°F).
- In damp or dusty locations.
- In locations subject to vibrations.
- Near strong magnetic fields.
- Near television or radio station generating strong radio frequency energy.

Protect from impacts
Do not drop the unit or subject it to severe shocks.

Keep well ventilated
To prevent the temperatures from rising inside the unit, keep the unit uncovered and well ventilated while in operation.

Cleaning
Clean the cabinet and panels by wiping with a soft, dry cloth. For severe stains, moisten the cloth with a small amount of neutral solvent, and finish by wiping with a dry cloth. Do not use alcohol, benzine, thinners or volatile liquids, as these may discolor or damage the cabinet surface.

Transporting
- Remove any cassette that may be in the cassette compartment.
- Protect the unit from impacts by transporting it in its original carton or protective case.

Chapter 3

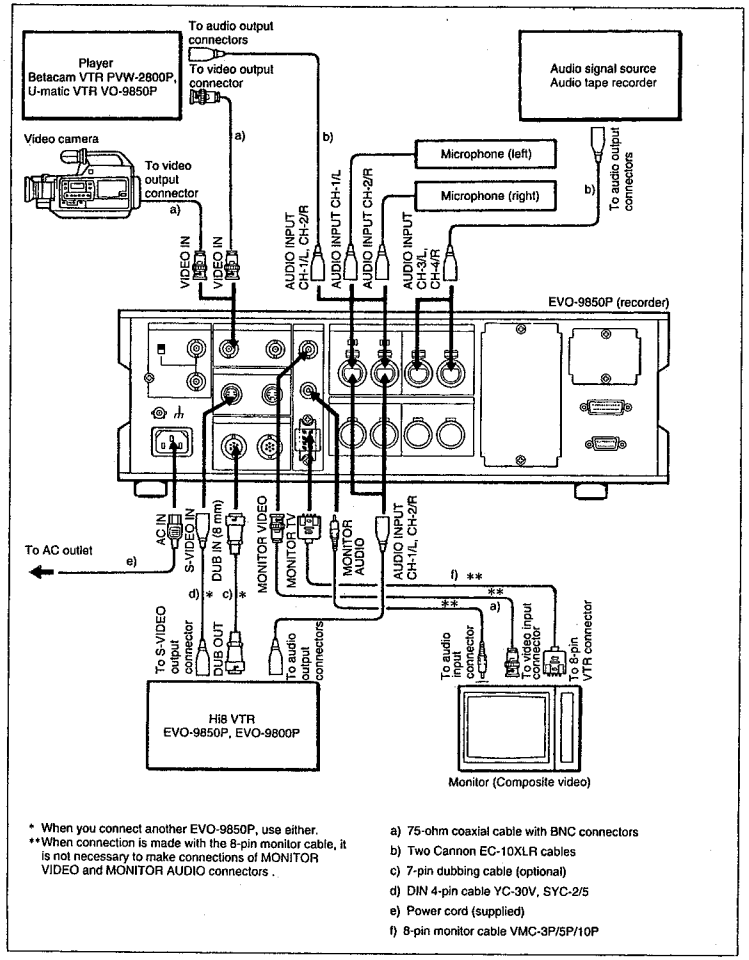
Connections

This section explains how to make the following three types of connection.
- Basic connections
  Connections for recording
  Connections for playback
- Editing system connections
- Reference signal connections.

Basic Connections

The diagrams in this subsection show how to connect input and output signals using the appropriate cable, to the connectors on the unit's connector panel. Use these diagrams as a guide to connect the necessary signals to and from the video equipment you intend to use for actual recording and playback.

Connections for recording



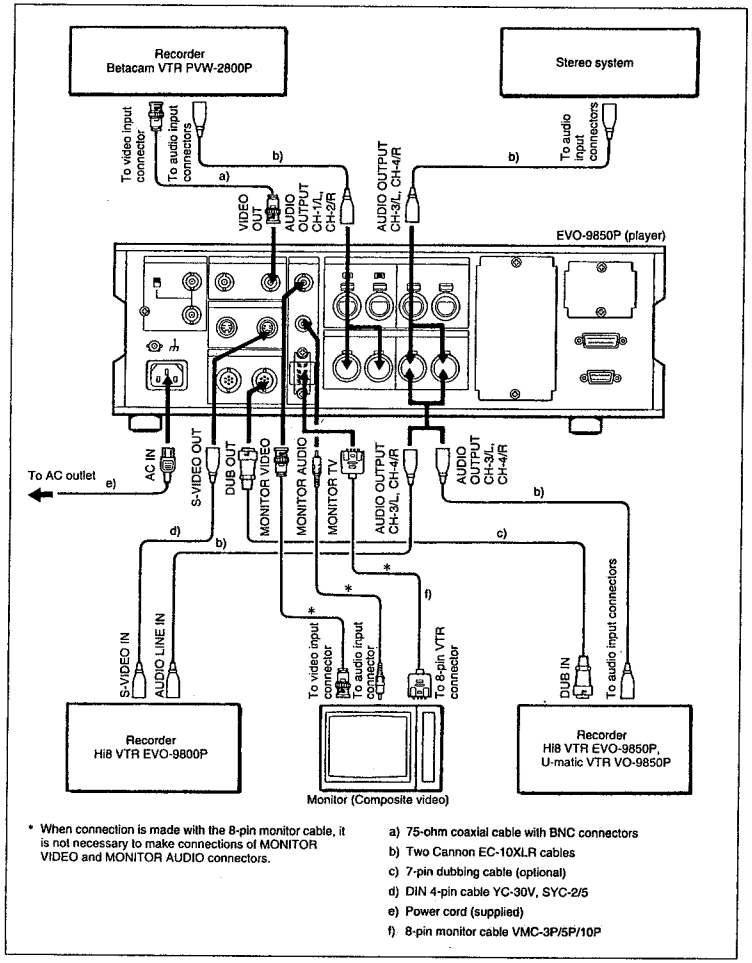
* When you connect another EVO-9850P, use either.
**When connection is made with the 8-pin monitor cable, it is not necessary to make connections of MONITOR VIDEO and MONITOR AUDIO connectors .

a) 75-ohm coaxial cable with BNC connectors
b) Two Cannon EC-10XLR cables
c) 7-pin dubbing cable (optional)
d) DIN 4-pin cable YC-30V, SYC-2/5
e) Power cord (supplied)
f) 8-pin monitor cable VMC-3P/5P/10P

Connections for recording

Connections (Continued)

Connections for playback

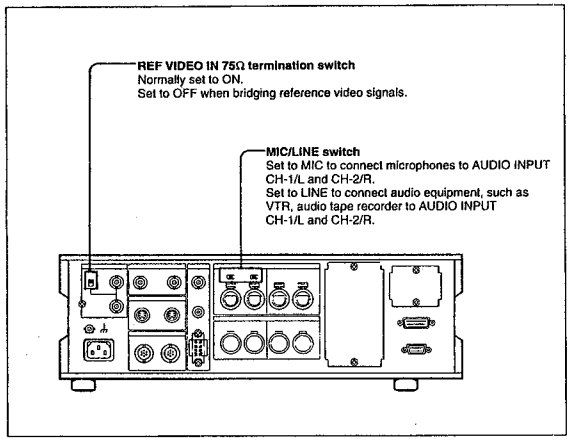


* When connection is made with the 8-pin monitor cable, it is not necessary to make connections of MONITOR VIDEO and MONITOR AUDIO connectors.

a) 75-ohm coaxial cable with BNC connectors
b) Two Cannon EC-10XLR cables
c) 7-pin dubbing cable (optional)
d) DIN 4-pin cable YC-30V, SYC-2/5
e) Power cord (supplied)
f) 8-pin monitor cable VMC-3P/5P/10P

Connections for playback

Connector panel switch settings


REF VIDEO IN 75Ω termination switch
Normally set to ON.
Set to OFF when bridging reference video signals.
MIC/LINE switch
Set to MIC to connect microphones to AUDIO INPUT CH-1/L and CH-2/R.
Set to LINE to connect audio equipment, such as VTR, audio tape recorder to AUDIO INPUT CH-1/L and CH-2/R.

Connector panel switch settings

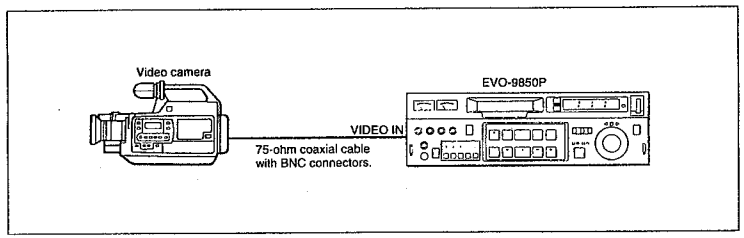
Chapter 3

Editing System Connections

Refer to the diagrams below, and to the user manuals for the VTRs and other video equipment constituting your system, when connecting input and output signals. When using two or more VTRs, a reference signal is needed to synchronize the unit's built-in time base corrector.

For more information, see "Reference Video Signal Connections" on page 3-13(E).

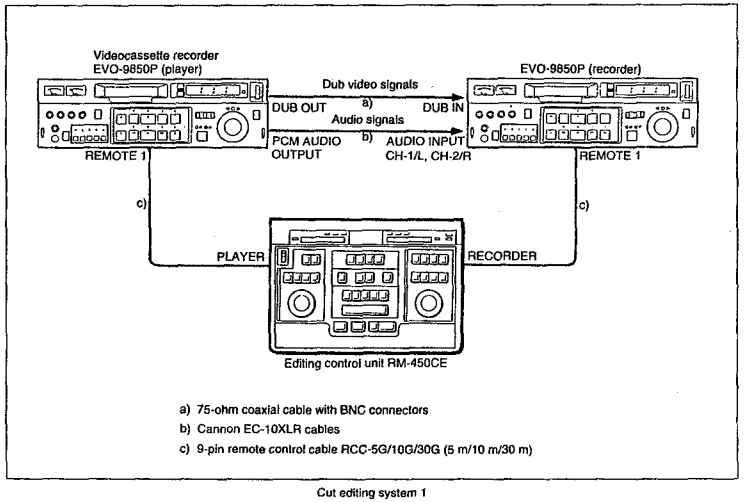
Manual editing system using the preroll button



Manual editing system

EVO-9850P switch setting
INPUT SELECT switch → LINE
MODE SELECT switch → EDIT

Cut editing system 1 (EVO-9850P → EVO-9850P)



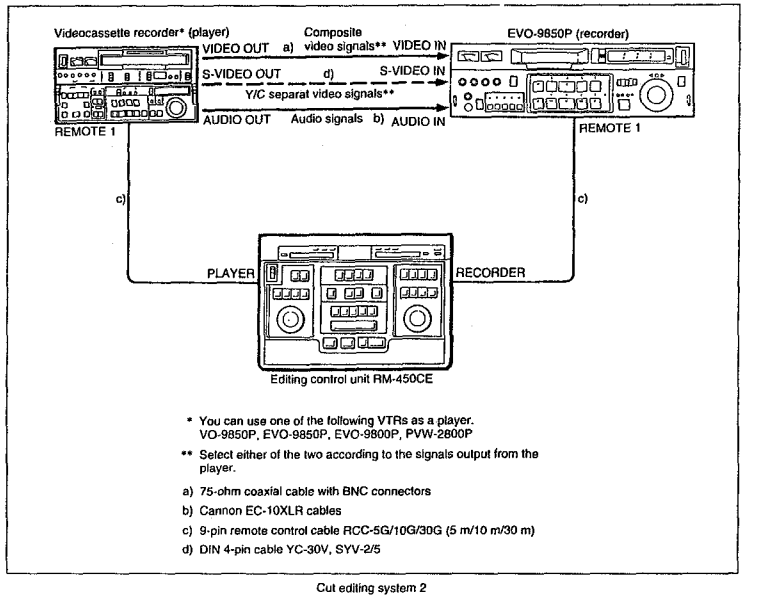
Cut editing system 1

EVO-9850P switch settings (recorder)
INPUT SELECT switch → DUB
VIDEO PRCS switch → NORM
PCM/AFM INPUT SELECT switch → CH1/2
MIC/LINE switch → LINE
MODE SELECT switch → EDIT

EVO-9850P switch settings (player)
VIDEO PRCS switch → EDIT
DUB OUT switch → 8 mm
MODE SELECT switch → NORMAL

Note
When you use the VTR other than Hi8 VTR (such as Betacam VTR, U-matic VTR, D-1 VTR and D-2 VTR) as a recorder, set the VIDEO PRCS switch of the EVO-9850P (player) to NORM.

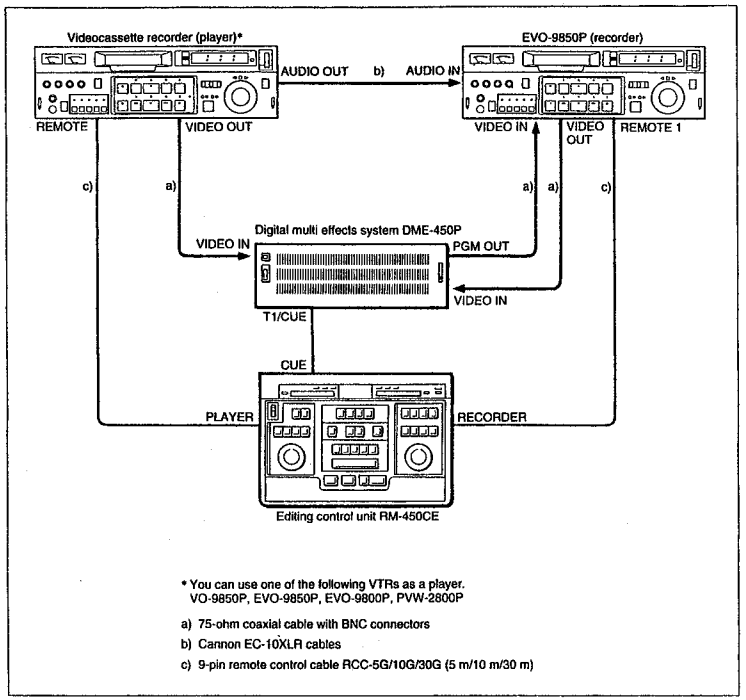
Cut editing system 2 (Hi8 VTR/Betacam VTR/U-matic VTR → EVO-9850P)



Cut editing system 2

EVO-9850P switch settings (recorder)
INPUT SELECT switch → LINE or S-VIDEO
VIDEO PRCS switch → NORM
MODE SELECT switch → EDIT
PCM/AFM INPUT SELECT switch →
PCM — CH1/2 or CH3/4
AFM — CH1/2 or CH3/4

Two-VTR editing system (Cut editing with digital multi effects)



* You can use one of the following VTRs as a player.
VO-9850P, EVO-9850P, EVO-9800P, PVW-2800P

a) 75-ohm coaxial cable with BNC connectors
b) Cannon EC-10XLR cables
c) 9-pin remote control cable RCC-5G/10G/30G (5 m/10 m/30 m)

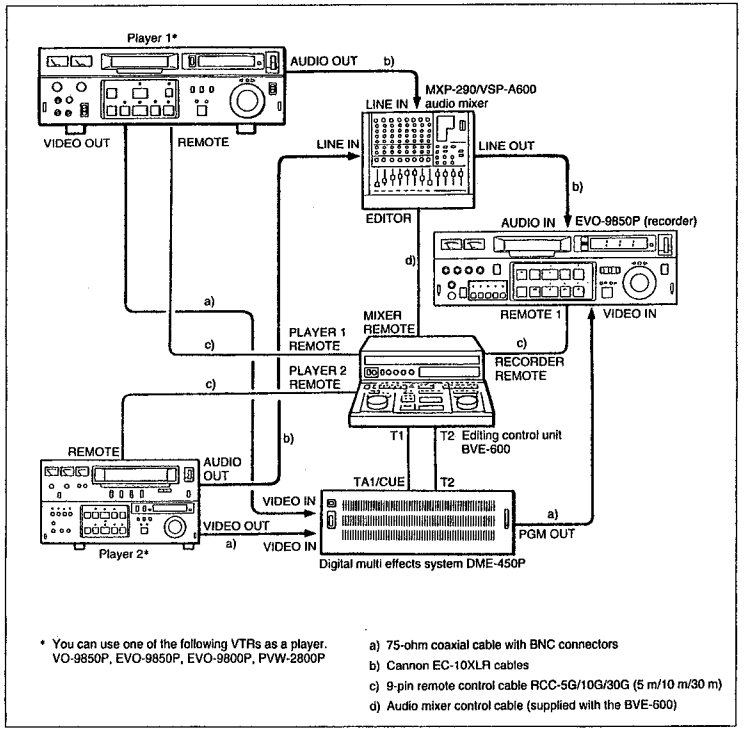
Two-VTR editing system

EVO-9850P switch settings (recorder)

INPUT SELECT switch → LINE
VIDEO PRCS switch → NORM
MODE SELECT switch → EDIT
PCM/AFM INPUT SELECT switch →
PCM — CH1/2 or CH3/4
AFM — CH1/2 or CH3/4

Connections (Continued)

A/B roll editing system with digital multi effects



* You can use one of the following VTRs as a player.
VO-9850P, EVO-9850P, EVO-9800P, PVW-2800P

a) 75-ohm coaxial cable with BNC connectors
b) Cannon EC-10XLR cables
c) 9-pin remote control cable RCC-5G/10G/30G (5 m/10 m/30 m)
d) Audio mixer control cable (supplied with the BVE-600)

A/B roll editing system

EVO-9850P switch settings (recorder)

INPUT SELECT switch → LINE
VIDEO PRCS switch → NORM
MODE SELECT switch → EDIT
PCM/AFM INPUT SELECT switch →
PCM — CH1/2 or CH3/4
AFM — CH1/2 or CH3/4

Reference Video Signal Connections

To obtain the required picture when you wish to connect two VTRs for editing, the VTRs and the editing control unit must be synchronized with each other. The time base correctors normally require an external reference signal. This unit contains a built-in sync signal generator, so that you can edit even in locations where an external reference signal is not available. The output from the sync signal generator is supplied to the unit's built-in time base corrector and to the servo circuits. The unit's reference signal is changed depending on the input signal and the setting of the MODE SELECT switch of the unit.

Sync system

The unit synchronizes with the external sync signal when the video signal is input from VIDEO IN, S-VIDEO IN or DUB IN connector or sync signal is input from REF VIDEO IN connector. The unit synchronizes with the internal sync signal generated by the built-in sync signal generator when the unit does not input external sync signals. The reference signal is changed depending upon the setting of the MODE SELECT switch, input signals and the VTR operation mode.

Automatic selection of reference signal for TBC

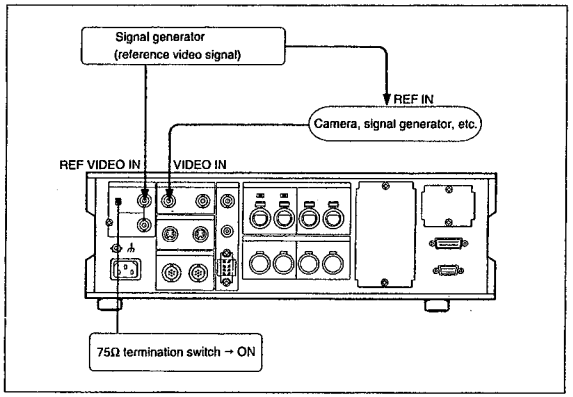
VTR operation mode / MODE SELECT switch setting / Input signal		Recording	Playback	
Video signal	External sync signal	NORMAL EDIT	EDIT	NORMAL
Yes	Yes	Video	External sync*	External sync
Yes	No	Video	Internal sync**	Internal sync
No	Yes	External sync		
No	No	Internal sync		

* When operating in this mode, it is required that the video signal is locked to the external sync signal.

**In this mode, a reproduced picture may become unstable. In such a case, feed an external sync signal or change the mode from EDIT to NORMAL for correction.

Recording from a camera, signal generator, etc.

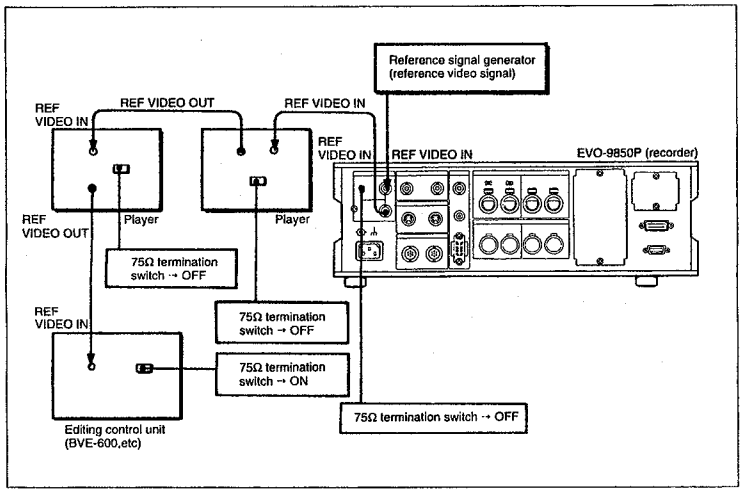
Example 1: When sending the reference video signal to both the VTR and a camera



Sending the reference video signal to the VTR and camera

Recording from a VTR

Example 2: A/B roll editing



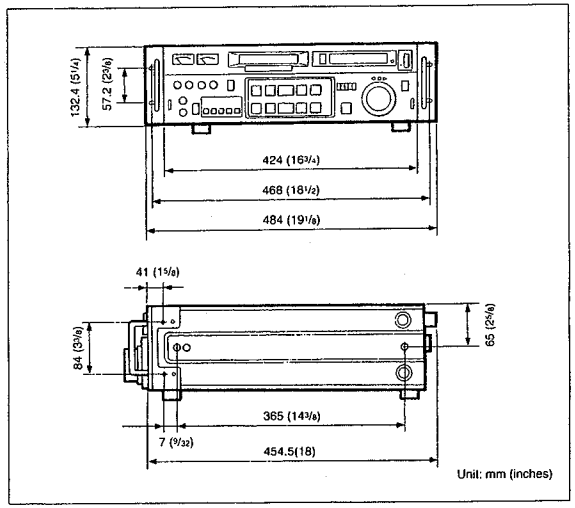
Reference video signal connection for A/B roll editing

Chapter 3

Chapter 3

Rack Mounting

The EVO-9850P can be mounted into a standard 19-inch rack. When the unit is to be mounted in a rack, consult your Sony dealer.



Rack mounting

System Setup from Menu

You can set the time code, tape transportation data or change the editing data from a menu. There are two types of menu, basic and enhanced. Normally, use only the functions available from the basic menu. This section explains about the contents of basic menu and how to change the settings.

For information on the enhanced menu, see "Contents of Enhanced Menu" on page 3-21(E).

Contents of Basic Menu

The table below summarizes the basic menu.

Basic menu contents (☐ indicates the factory set data.)

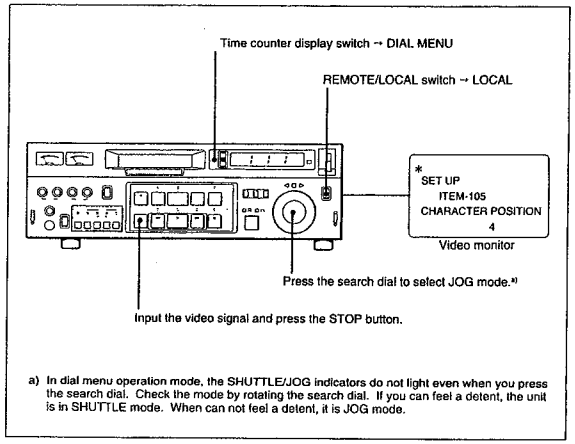
Menu No.	Items	Data: On time counter display	Data: On monitor screen	Contents
101	TIME CODE PRESET	[00000000] ↕ 23595929	[TCG 00:00:00:00] ↕ TCG 23:59:59:29	Time code setting. 00H00M00S00F through 23H59M59S29F can be set.
102	U BIT PRESET	[00000000] ↕ FFFFFFFF	[00 00 00 00] ↕ FF FF FF FF	User bit setting. Eight-digit hexadecimal data can be set and be recorded on a tape.
105	CHARACTER POSITION	[00] /01/02/ ~ 15	[OFF] /1/2/ ~ 15	Sets the position to display the characters on the monitor screen.
106	CHARACTER SIZE	[0] /1	[SMALL] /LARGE	Selects the size of the displayed characters. **SMALL:** Small characters **LARGE:** Large characters
200	SETUP GRADE	[0] /1	[BASIC] /ENHANCED	Selects the grade of dial menu operation. **BASIC:** Basic functions, menu number 101 to 200 can be set. **ENHANCED:** All functions, menu number 101 to 230 can be set. **Note** Normally, select BASIC. To use the enhanced functions, select ENHANCED.

Changing Menu Settings

To change the factory settings, proceed as follows.

Selecting the dial menu operation mode

Perform dial menu operations in stop (EE) mode. To select dial menu operation mode, set the controls as follows.



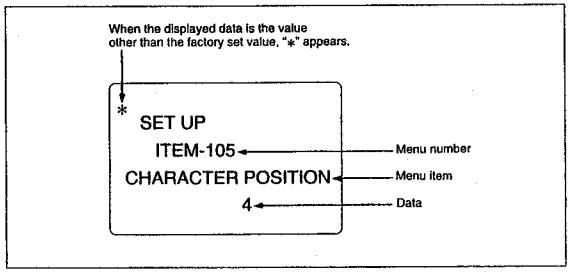
a) In dial menu operation mode, the SHUTTLE/JOG indicators do not light even when you press the search dial. Check the mode by rotating the search dial. If you can feel a detent, the unit is in SHUTTLE mode. When can not feel a detent, it is JOG mode.

Switch settings to change menu setting

With the above setting, the unit enters dial menu operation mode. The ◁, ☐ and ▷ indicators light and the time counter display starts flashing. One of the menu numbers 101 to 200 will appear on the monitor. On the time counter, data for the item displayed on the video monitor will appear, the number flashing.
When the menu number 200 is set to "ENHANCED", one of the items of menu number 101 to 230 will appear when the unit enters dial menu operation mode.

About the monitor display

The items and the contents are superimposed on the video signal supplied from the MONITOR VIDEO or TV connector, and appear on the connected monitor screen when you set the time counter display switch to DIAL MENU. During dial menu operation, the menu number and data appear on the time counter display on the front panel.



Menu display on the monitor screen

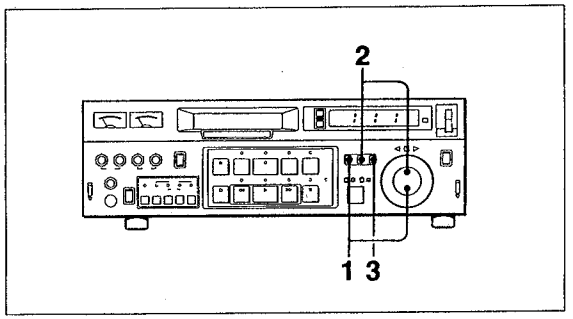
Note

The unit has not necessarily malfunctioned if the dial menu data superimposed on the monitor display disappears when the unit enters still mode. This may happen when guard band noise appears at the position of the vertical sync signal in still mode.

System Setup from Menu (Continued)

Changing menu settings

To change a menu item, proceed as follows.



Changing menu items

1 While holding down the MENU button, rotate the search dial to find the item you wish to change.
Rotate the dial clockwise to display higher-numbered items, or counterclockwise to display lower-numbered items.

2 While holding down the DATA button, rotate the search dial to scroll forwards or backwards through the item's data.
Release the DATA button to select the currently displayed data.
To select the point at which to set the time code or user bit data, turn the search dial without holding down the DATA button.
Repeat steps 1 and 2 until you are satisfied with the settings for all menu items.

3 Press the SET button to save the selected items.
The ◁, □, and ▷ indicators flash for a second, and the displayed data is stored to memory. Then, the flashing of the data stops.

To restore the factory settings

When the "*" mark appears on the monitor in step 2, it indicates that the selected data is not factory-set data. To restore the factory settings, select data for which * is not displayed.

To terminate dial menu operation

Set the time counter display switch to TC or COUNTER. The displayed data disappears and the unit enters ordinary operation mode.

Contents of Enhanced Menu

You can set the enhanced functions when you set menu number 200 of the basic function to "ENHANCED".

For details about "ENHANCED" of menu number 200, see "Contents of Basic Menu" on page 3-17(E).

Enhanced menu contents ([ ] indicates the factory set data.)

Menu No.	Items	Data: On time counter display	Data: On monitor screen	Contents
201	ERROR STATUS	- - - - - - - - ERROR-02 ERROR-10 ERROR-20 ERROR-21 ERROR-22 ERROR-23 ERROR-90 ERROR-99	NONE TAPE SLACK HUMID SYSTEM ERROR no display SYSTEM ERROR 50 SYSTEM ERROR 60 no display no display	Self diagnostic function. When an error occurs during operation, an error code is displayed on the time counter display. In this case, select this menu, and the error name corresponding to the error will be displayed on the monitor screen. **Notes** • When "ERROR-10" is displayed, see "Moisture condensation" on page 6-6(E). • When errors of the error number 20 and higher occur, please consult your Sony dealer.
205	HOURS METER (DRUM)	[00000] ↕ 15000	[00000H] ↕ 15000H	Displays the accumulated time of the rotation of the upper head drum. The data from 0 to 15,000 hours can be displayed. Use the data for the reference of head replacement.
206	HOUR METER	[00000] ↕ 15000	[00000H] ↕ 15000H	Displays the accumulated power-on time. The data from 0 to 15,000 hours can be displayed.
207	STILL TIMER	00/01/-/[15]	0.5/1/-/[8]	Sets the time to enter the tape protection mode. To prevent the video head from clogging or to reduce the tape damage, the unit automatically enters the tape protection mode after the fixed time has passed in stop or still mode. This item sets the transition time from stop or still mode to the tape protection mode. The time can be set between 0.5 second and 8 minutes.

(To be continued)

System Setup from Menu (Continued)

Enhanced menu contents (continued)

Menu No.	Items	Data: On time counter display	Data: On monitor screen	Contents
209	SELECTION FOR SEARCH DIAL ENABLE	0/ [1]	DIRECT/ [VIA SEARCH BUTTON]	Selects the search dial function. **DIRECT:** When the search dial is turned in mode other than record or edit, the unit enters search mode. **VIA SEARCH BUTTON:** When the search button is pressed, the unit enters search mode.
214	PREROLL TIME	00/01/-/[05]-/15	0/1/-/[5]-/15	Sets the preroll time. The time can be set from 0 to 15 seconds.
218	PINCH ON DELAY	00/01/02-/[04]-/15	0/1/2-/[4]-/15	Sets the time required to start tape transportation after the PLAY command is sent.
224	TAPE PROTECTION	[0]/ 1	[STEP FWD]/ LONG PAUSE	Selects tape protection mode. After the time set in menu 207 Has passed, the unit enters the operation selected in this menu. **STEP FWD:** The tape advances several frames running in the forward direction at a speed of 1/20 time normal speed. **LONG PAUSE:** The tape around the head drum is slackened (the long pause mode).
228	DIGITAL YNR SELECT	0/[1]	OFF/[ON]	Selects whether the digital luminance noise reducer is turned on or off. **ON:** The reducer is controlled with the NOISE REDUCTION switch. **OFF:** The reducer is compulsorily turned off.
229	DIGITAL ENHANCER	[0]/1	[OFF]/ON	Turns on or off the vertical enhancer circuit of the luminance signal.
230	FRAMING	0/1/[2]	OFF/ON/[CF ON]	**ON:** Framing (continuity of odd- and -even- numbered fields) is maintained for recording. **OFF:** Framing is not maintained. **CF ON:** Color framing is maintained for recording.

Cassettes

Recommended Cassettes

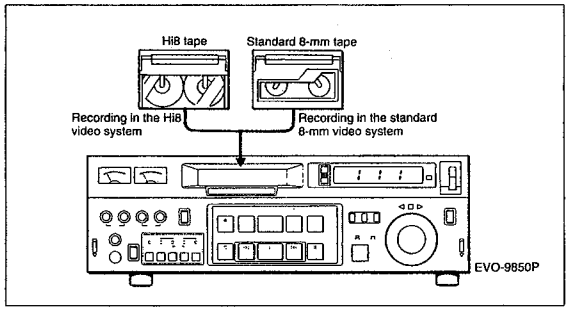
You can use the following Hi8 cassettes. However, we recommend you use Hi8 cassettes designed for business application to offer the best drop-out level.
Hi8 cassettes for business use: E5-HMEX, P5-HMPX
Hi8 cassettes: E5-HME, P5-HMP
Standard 8-mm cassettes: P5-MP series

Note
Do not use home-use cassettes 120 minutes or more.

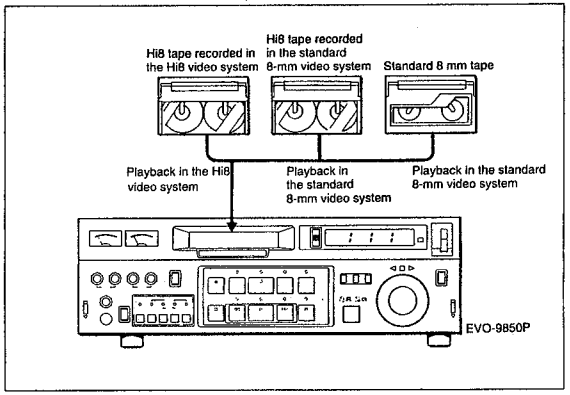
Cassettes and automatic switching of recording and playback

The unit differentiates between Hi8 cassettes and standard 8-mm cassettes by sensing the detection holes on the Hi8 cassettes. It automatically switches recording and playback mode as shown below.

Recording
When you use a Hi8 cassette for recording, the unit senses the detection holes in the cassette shell, and automatically performs recording in SP (standard play) mode of the Hi8 video format.
When you use a standard 8-mm tape, the unit performs recording in the standard 8-mm video format.

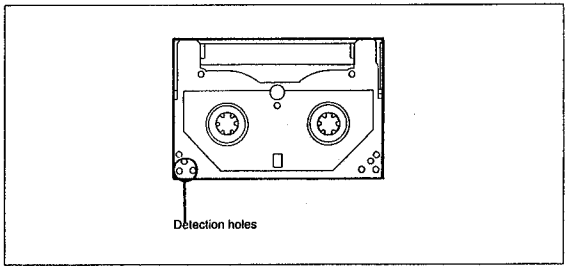


Playback
The unit detects the recording format by verifying the recording signal, and plays back the tape in the appropriate mode.


Hi8 tape recorded in the Hi8 video system
Hi8 tape recorded in the standard 8-mm video system
Standard 8 mm tape
Playback in the Hi8 video system
Playback in the standard 8-mm video system
Playback in the standard 8-mm video system
EVO-9850P

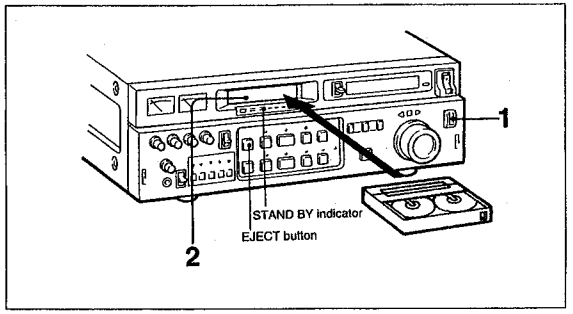
The Hi8 indicator on the front panel lights when a tape recorded in Hi8 video format is played back.

Hi8 cassettes
New Hi8 cassettes with high durability were specially developed for Hi8 video system recording/playback. They feature characteristics well suited the Hi8 video system. Hi8 cassettes feature a detection hole on the bottom of the cassette shell to automatically set Hi8 VTRs to Hi8 video format recording.



Inserting and Ejecting Cassette

Inserting the cassette



Inserting the cassette

1 Set the POWER switch to ON.

2 After taking up any slack in the cassette, hold it with the clear window facing upward, and insert it as indicated by the arrows in the diagram.
The STAND BY indicator lights and the cassette is loaded automatically.
Once the cassette has been completely pulled in, the STAND BY indicator goes out, and the ⊡⊡ indicator lights.

If the STAND BY indicator remains lit after a cassette has been completely loaded

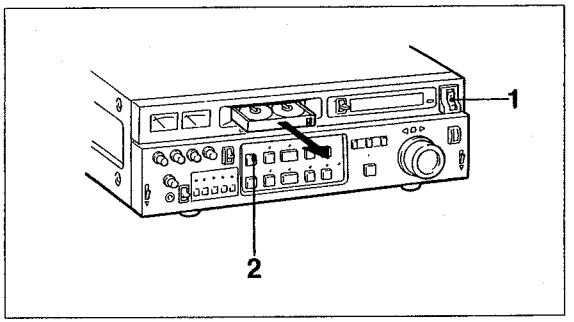
- Set the POWER switch to off and then set it to on again.
- If the STAND BY indicator still remains lit, eject the inserted cassette.

If the cassette cannot be ejected or if the STAND BY indicator still remains lit after the cassette is ejected, then consult your nearest Sony dealer.

Notes

- The labels on the cassette should be firmly attached. If they become detached from an inserted cassette, you may not be able to remove the cassette.
- Never insert anything into the small holes on the rear of the cassette. These holes are used to sense the kind of tape, thickness of tape, or if the tape is protected against erasure, etc.

Ejecting the cassette



Ejecting the cassette

1 Make sure that the power is turned on.

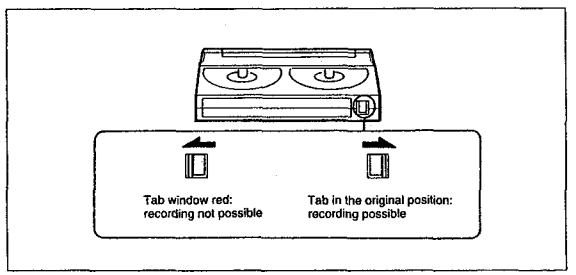
2 Press the EJECT button.
The STAND BY indicator lights. When the indicator goes out, the cassette is ejected. The ⊡⊡ indicator also goes out.

Note

Do not put your hand into the cassette compartment when removing a cassette.

Preventing Accidental Erasure

When you record onto a recorded cassette, the previously recorded material is erased. If you want to safeguard the material recorded on a cassette, slide the tab on the rear of the cassette to the left, so that the tab window is red. Now, the cassette can not be used for recording, even if you press the REC button.



Preventing accidental erasure

When recording, check that the tab is set to the original position. If cassette that has its tab moved is inserted, a picture appears on the monitor in EE mode. However, the unit does not enter recording mode.

Handling and Storing Cassettes

Note the following when handling and storing cassettes.

- Do not store a cassette in the following locations.
  Places subject to direct sunlight
  Near heat sources
  Places subject to high humidity
  Places subject to excessive dust
  Near magnetic fields
- After use, rewind the tape completely to avoid damage to the tape.
- Store the cassette in its case and keep it vertical.
- Do not drop the cassette or subject it to mechanical shock.

Chapter 4
Recording and Playback

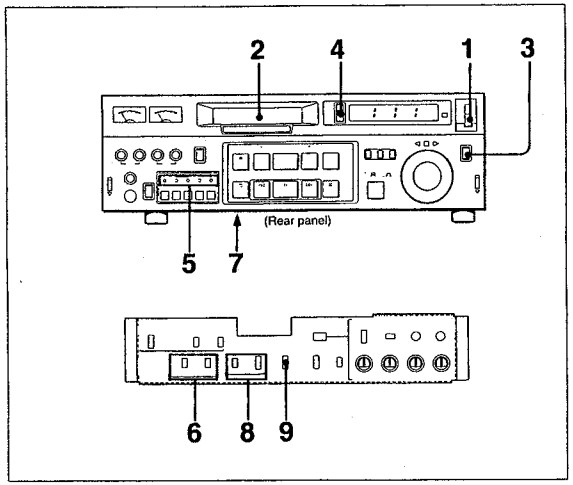
This chapter explains basic recording and playback.

Recording ..... 4-3(E)
Preparing for Recording ..... 4-3(E)
Recording Video and Audio Signals ..... 4-8(E)
Playback ..... 4-10(E)
Preparing for Playback ..... 4-10(E)
Normal Speed Playback ..... 4-11(E)
JOG and SHUTTLE Mode Playback ..... 4-12(E)

Recording

Preparing for Recording

Prepare to record as follows.



Preparing for recording

1 Set the POWER switch to ON.

2 Insert a cassette.
For details, see Chapter 3 "Inserting and Ejecting Cassettes" on page 3-25(E).

3 Set the REMOTE/LOCAL switch to LOCAL.

4 Set the time counter display switch to the time data you wish to display.
COUNTER: Displays the amount of tape travel in hours, minutes, seconds and frames.
Press the RESET button to reset the display to 0:00:00:00.
TC: Display the 8-mm time code.

5 Make sure that the following indicators are off.
- Indicator above the ASSEMBLE button
- Indicators above the INSERT buttons

6 Set the PCM/AFM INPUT SELECT switch to the audio signal you wish to record.
For details, see "Selecting the audio recording system" on page 4-4(E).

Chapter 4

Recording (Continued)

7 Set the MIC/LINE switch of the AUDIO INPUT CH-1/L CH-2/R connectors to the audio signal you wish to input.
MIC: Set the switch to this position to record the audio signal from the microphone connected to the AUDIO INPUT CH-1/L CH-2/R connectors.
LINE: Set the switch to this position to record the audio signal from a VTR player or audio equipment.

8 Set the MONITOR SELECT switch to the audio signal you wish to monitor.
For details, see "Selecting audio input signal to monitor" on page 4-6(E).

9 Set the INPUT SELECT switch to the video signal you wish to record as follows.

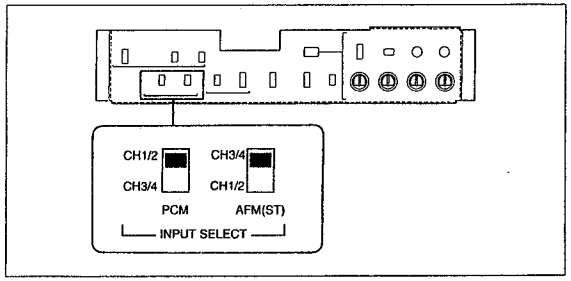
Input signal	Input connector	Switch setting
Composite video	VIDEO IN	LINE
Separate Y and C signals	S-VIDEO IN	S-VIDEO
Dub video signal for 8-mm VTR	DUB IN (8 mm)	DUB

Selecting the audio recording system

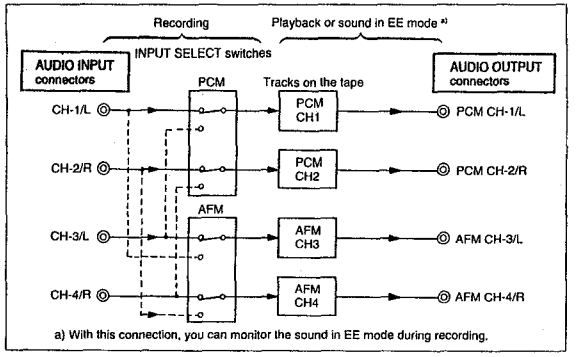
Audio signals can be recorded using either of two systems; matrix-stereo AFM recording and 2-channel PCM recording.
You can select which input audio signal is to be recorded with which recording system. You can also record a single audio input signal source with two different recording systems.
How to select the audio track to be recorded is explained below, with an example. The diagram below also shows the signal flow.

Example: To record two audio input signal sources with the AFM and PCM recording systems.

Set the PCM/AFM INPUT SELECT switch as shown below to record the audio signal input to AUDIO INPUT CH-1/L, CH-2/R with the PCM recording method and the audio signal input to AUDIO INPUT CH-3/L, CH-4/R with the AFM recording method.



PCM/AFM INPUT SELECT switch settings



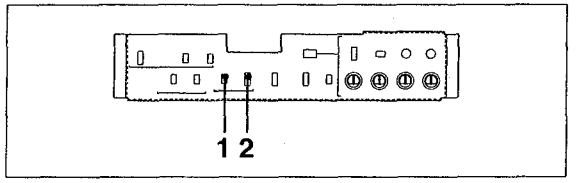
Audio signal flow

Recording audio from microphones

Connect microphones to the AUDIO INPUT CH-1/L and CH-2/R connectors.
Set the MIC/LINE switch to MIC.
For an explanation of setting the PCM/AFM INPUT SELECT switch, see the above example.

Selecting the audio signal to monitor

You can monitor sound through headphones or monitor's speakers while recording. Select the audio signal to monitor with the MONITOR SELECT switches.



Selecting the audio signal to monitor

1 Set the PCM/AFM switch of MONITOR SELECT to the recording system of the audio you wish to monitor.
PCM: Set the switch to this position to monitor the audio signal recorded on the PCM tracks.
AFM: Set the switch to this position to monitor the audio signal recorded on the AFM channels.

2 Set the CH-1/MIX/CH-2 switch to the channel you wish to monitor.

Switch setting	Audio signal output from PHONES, MONITOR TV and MONITOR AUDIO connectors	
	When you set the switch to PCM	When you set the switch to AFM
CH-1	Audio signal recorded on PCM track 1	Audio signal recorded on AFM left channel
MIX*	Mixed audio signals from PCM tracks 1 and 2	Mixed audio signals from AFM left and right channels.
CH-2	Audio signals recorded on PCM track 2	Audio signals recorded on AFM right channel

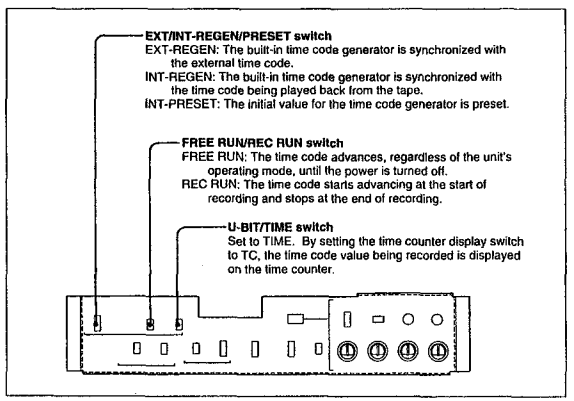
* At the MIX position, you can monitor the stereo sound through headphones.

Note

The audio signal from the AUDIO OUTPUT connectors is not affected by the setting of the MONITOR SELECT switches.
The AUDIO OUTPUT PCM CH-1/L and CH-2/R connectors output the audio signals recorded on PCM tracks 1 and 2, respectively.
The AUDIO OUTPUT AFM CH-3/L and CH-4/R connectors output the audio signals recorded on the AFM left and right channels, respectively.

Switch settings for recording 8-mm time code

The 8-mm time code is recorded simultaneously with the video and audio signals. To record the 8-mm time code with the video and audio signals or to record the 8-mm time code onto the tape onto which the video and audio signals have already been recorded, set the switches on the sub-panel as follows. This switch setting enables the recording of 8-mm time codes during editing.
To manipulate the switches on the sub-panel, raise the lower control panel to the horizontal position.


EXT/INT-REGEN/PRESET switch
EXT-REGEN: The built-in time code generator is synchronized with the external time code.
INT-REGEN: The built-in time code generator is synchronized with the time code being played back from the tape.
INT-PRESET: The initial value for the time code generator is preset.
FREE RUN/REC RUN switch
FREE RUN: The time code advances, regardless of the unit's operating mode, until the power is turned off.
REC RUN: The time code starts advancing at the start of recording and stops at the end of recording.
U-BIT/TIME switch
Set to TIME. By setting the time counter display switch to TC, the time code value being recorded is displayed on the time counter.

Switch settings for recording an 8-mm time code

Time code data can be set by the dial menu operation.
For details, see Chapter 3 "System Setup from Menu" on page 3-17(E).

To set the user bits

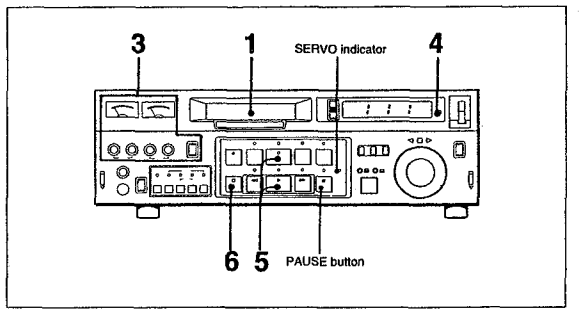
You can set the user bits using the basic menu function and also record the user bits to the tape.
For details, see Chapter 3 "System Setup from Menu" on page 3-17(E).

To use the external time code

You can convert the EBU time code to 8-mm time code and record 8-mm time code by installing the EVBK-110 EBU time code input/output board (not supplied).
In such a case, set the switches in the sub panel as follows.
EXT/INT switch → EXT
REGEN/PRESET switch → REGEN
FREE RUN/REC RUN switch
This switch is ignored (the unit is set automatically to FREE RUN mode).
U-BIT/TIME switch → TIME
Contact your Sony dealer for details of installing the EVBK-110 EBU time code input/output board.

Recording Video and Audio Signals

Record video and audio signals as follows.



Recording video and audio signals

1 Insert the cassette, making sure that the tab on the rear of the cassette is in its original position and that the tab window is not red.

2 Prepare the program to be recorded.
To record a signal from another VTR: Set the other VTR to playback mode.
To record a signal from a video camera: Adjust the video camera.
The picture, in EE mode, appears on the monitor.

3 Adjust the audio recording level.
For details, see "Adjusting the audio recording level" on page 4-9(E).

4 Press the RESET button when the time counter display switch is set to COUNTER.
The value on the time counter display becomes "0:00:00:00".

5 While holding down the REC button, press the PLAY button to begin recording.
The SERVO indicator lights once the head rotation and tape speed stabilize.

6 Press the STOP button to stop recording.
The unit stops recording and the STOP indicator lights.
If recording continues to the end of the tape, the tape automatically rewinds to the beginning and then stops.

Adjusting the audio recording level

Adjust the audio recording level for each recording system and each channel by using the AUDIO LEVEL controls.

1 Set the METER SELECT switch to the recording system you wish to adjust.
PCM: Set the switch to this position to adjust the recording level of the audio signal to be recorded onto the PCM tracks.
AFM: Set the switch to this position to adjust the recording level of the audio signal to be recorded onto the AFM channels.

2 Adjust the audio signals of each channel by using the AUDIO LEVEL controls.
CH-1/3: Adjusts the recording level of the audio signal input to the AUDIO INPUT CH-1/L or CH-3/L connectors.
CH-2/4: Adjusts the recording level of the audio signal input to the AUDIO INPUT CH-2/R or CH-4/R connectors.
Adjust the AUDIO LEVEL controls such that the pointer of the level meter approaches 0 VU at maximum input level.

To stop the tape momentarily

Press the PAUSE button. To resume recording, press the PAUSE button again.

Long pause mode

If recording pause mode continues for about 8 minutes, the tape around the head drum is automatically slackened to protect the video head and the tape. Hence, the still picture will disappear. This is called "long pause mode". To release the long pause mode, press the PAUSE button.

The time to enter tape protection mode can be set between 0.5 seconds and 8 minutes by using the dial menu 207. See page 3-21(E) for details.

Monitoring the picture being recorded (in E-E mode)

While recording, you can monitor the picture on a monitor connected to the VIDEO OUT, S-VIDEO OUT, MONITOR VIDEO or MONITOR TV output connector. When doing so, pay particular attention to the following.

- Since this output signal (E-E output signal) passes through the unit's circuits, the signal will deteriorate a little, compared to the input signal. Therefore, do not use this E-E output signal for dubbing.
- When you set the MODE SELECT switch to NORMAL, thin horizontal noise bars may appear on the E-E output signal picture in STOP, F FWD, REW and EJECT mode. The recorded signal, however, will be free of such noise. If you want to monitor an undistorted E-E output signal picture, feed a reference video signal, synchronized with the signal being input to the VIDEO IN or S-VIDEO IN connector, to the REF VIDEO IN connector, or change the MODE SELECT switch setting to EDIT.

Note

To play back pictures when no reference video signal is being fed to the REF VIDEO IN connector, set the MODE SELECT switch to NORMAL.

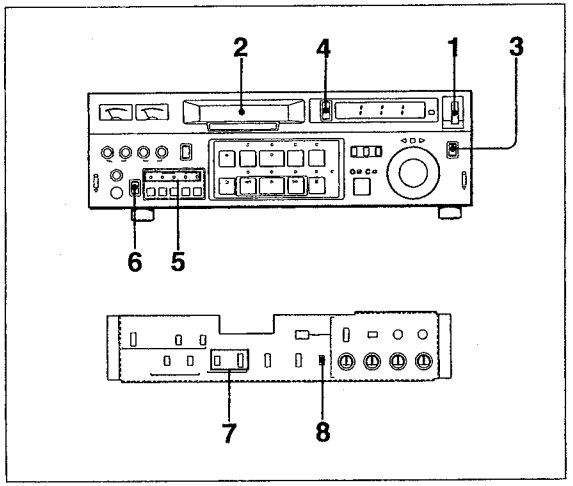
Chapter 4

Chapter 4

Playback

Preparing for Playback

Prepare to play back as follows.



Preparing for playback

1 Set the POWER switch to ON.

2 Insert a cassette.
For details, see Chapter 3 "Inserting and Ejecting Cassettes" on page 3-25(E).

3 Set the REMOTE/LOCAL switch to LOCAL.

4 Set the time counter display switch to the time data you wish to display.
COUNTER: Displays the amount of tape travel in hours, minutes, seconds and frames.
Press the RESET button to reset the display to 0:00:00:00.
TC: Display the 8-mm time code or user bits.

The display of the 8-mm time code or user bits is determined by setting of the U-BIT/TIME switch of the sub-panel.
The same data as that displayed on the time counter can be superimposed on the monitor screen by setting with the basic menu function.
For details, see "System Setup from Menu" on page 3-17(E).

5 Ensure that the following indicators are off.
- Indicator above the ASSEMBLE button
- Indicators above the INSERT buttons.

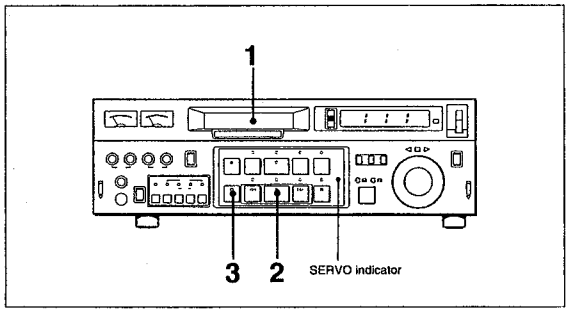
6 Set the MODE SELECT switch to NORMAL.

7 Set the MONITOR SELECT switch to the audio signal you wish to monitor.
For details, see "Selecting audio input signal to monitor" on page 4-6(E).

8 Set the VIDEO PRCS switch to NORM.

Normal Speed Playback

To play back video and audio signals at normal speed, proceed as follows.



Normal speed playback

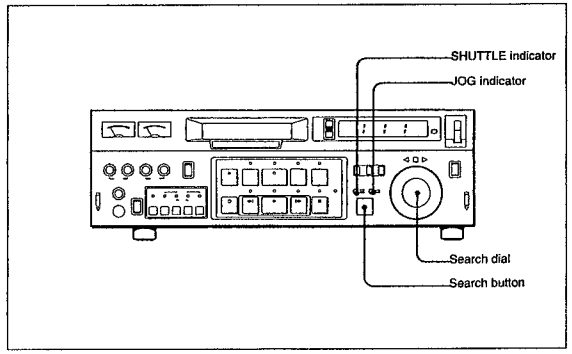
1 Insert a cassette.

2 Press the PLAY button.
Playback starts. The servo indicator lights when the head rotation and tape speed stabilize.

3 Press the STOP button to halt playback.
If played to its end, the tape is automatically rewound to the beginning and then stops.

JOG and SHUTTLE Mode Playback

JOG and SHUTTLE are variable speed playback modes. Rotate the search dial to set the speed.



Variable speed playback (JOG and SHUTTLE mode)

Press the dial to toggle between JOG and SHUTTLE modes. The current mode is indicated by the JOG and SHUTTLE indicators.

JOG mode (JOG indicator lit): Speed varies between 0 and ±1 times normal speed, corresponding to the rotation speed of the search dial. Use this mode to search for a desired point precisely.

SHUTTLE mode (SHUTTLE indicator lit): Speed varies between 1/20 and 13 times normal speed in the forward direction (when rotating the dial fully clockwise) and 13 times normal speed in the reverse direction (when rotating the dial fully counterclockwise). Use this mode to make a rough search for a desired position.

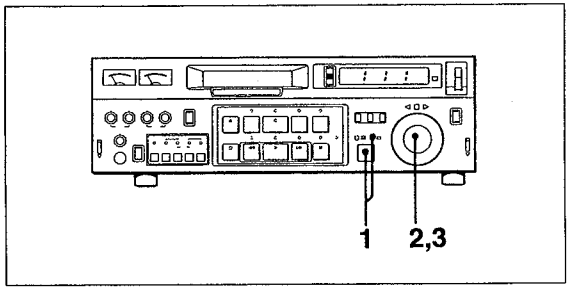
Tape protection mode

If the pause mode is held for about 8 minutes in search mode, the tape is advanced by several frames for tape protection. If the pause mode continues to be held, this will occur every 8 minutes.

The time to enter tape protection mode can be set between 0.5 seconds and 8 minutes by using the dial menu 207. See page 3-21(E) for details.

JOG mode playback

To playback in JOG mode, follow the procedure below.



JOG mode playback

1 Press the search button to enter search mode.
The SHUTTLE or JOG indicator lights.
When the JOG indicator is not lit, press the search dial to light the JOG indicator.
The monitor shows a still picture and the still □ indicator lights.

2 Rotate the search dial at the desired speed.
Slow-motion playback starts, at a speed corresponding to the rotational speed of the search dial. The direction indicator (◁ or ▷) indicates the direction of playback.

3 To stop JOG mode playback, stop turning the search dial.
The tape stops and the □ lamp lights, and the monitor shows a still picture.

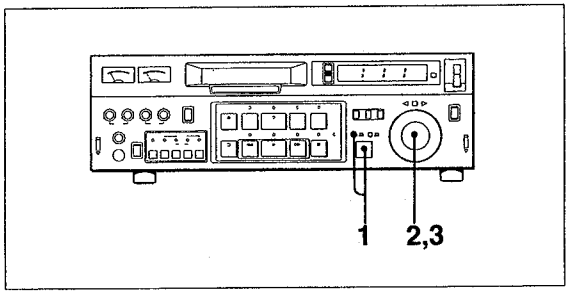
To terminate JOG mode playback

Press one of the PLAY, REW, F FWD or STOP button.

Audio monitoring in JOG mode playback

You can monitor the audio recorded on the PCM tracks during JOG playback.

SHUTTLE mode playback



SHUTTLE mode playback

1 Press the search button to enter search mode.
The SHUTTLE or JOG indicator lights.
When the SHUTTLE indicator is not lit, press the search dial to light the SHUTTLE indicator.
The monitor shows a still picture and the still □ indicator lights.

2 Turn the search dial to the angle for the desired speed.
The dial has a detent at the center position, corresponding to a speed of 0. Playback begins at the desired speed. The direction indicator (◁ or ▷) indicates the direction of playback.

3 To stop SHUTTLE mode playback, return the search dial to the center position.
The tape stops momentarily, the □ lamp lights, and the monitor shows a still picture.

To terminate SHUTTLE mode playback

Press one of the PLAY, REW, F FWD or STOP button.

Using the search button

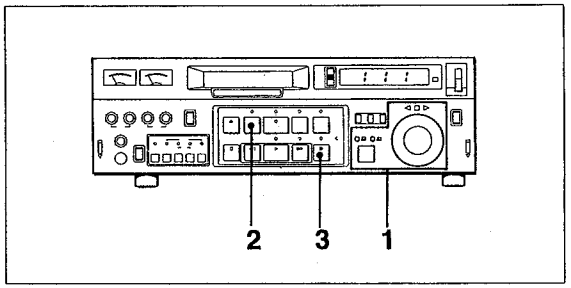
In SHUTTLE mode, you can use the search button as follows. Pressing the PLAY button alternately with the search button plays the tape at normal speed then at the speed selected with the search dial. Pressing the STOP button alternately with the search button alternately stops and starts playback at the selected speed.

Audio monitoring in SHUTTLE mode playback

You can monitor the audio recorded on the PCM tracks during SHUTTLE playback.

Starting playback at a desired time

To start playback at a desired time by using the PREROLL button, proceed as follows.



Playback using the PREROLL button

1 Search for the point from which to start the playback, then stop the tape.
Use the search dial to make a quick and exact search.
For details, see the explanation of "JOG and SHUTTLE Mode Playback" on page 4-12(E).

2 Press the PREROLL button.
The tape is rewound by five seconds, then stops in pause mode.

3 Press the PAUSE button exactly five seconds before you want to start playback.
The tape starts running. The tape transport will have stabilized at the desired time.

Obtaining stable video signals for the best possible playback picture

The unit has a built-in time base corrector to adjust for timing irregularities. Thus, the unit can supply stable video signals directly to all kinds of video equipment. You can adjust the phase and amplitude of the output signals by using the controls for TBC on the sub-panel, so that the unit can output a stable video signal synchronized with an external reference signal.
By connecting the BVR-55P TBC remote control unit (not supplied) to the TBC REMOTE connector on the rear panel, you can perform remote adjustment.
For information on the functions of the TBC controls, see the explanation in Chapter 2 "Location and Function of Parts and Controls" on page 2-12(E).
For information on the BVR-55P remote control unit,contact your Sony dealer.

Chapter 5
Editing

This chapter explains how to perform automatic editing. It also explains simple manual editing with the PREROLL button.

Kinds of Editing ..... 5-3(E)
Selecting Editing Mode ..... 5-3(E)
Automatic Editing ..... 5-6(E)
Before Starting ..... 5-6(E)
Operations for Automatic Editing ..... 5-9(E)
Manual Editing
—Editing with the PREROLL button ..... 5-11(E)
Before Starting ..... 5-11(E)
Operation for Manual Editing ..... 5-12(E)

Kinds of Editing

Videotape editing is the process in which selected scenes from a tape containing original material are arranged into sequences and combined with sound effects or background music to create the final program. In electronic editing, scenes from the playback and recorder VTRs are linked electronically, allowing the editor to adjust the entry and exit points until the result is satisfactory, executing the final recording automatically.
By connecting the EVO-9850P to an input source (video and audio source), you can perform manual editing using the PREROLL button. Also, you can perform automatic editing by using the unit with other VTRs and a Sony editing control unit such as the RM-450CE or BVE-600. In addition, including the Sony DME-450P digital multi effects system in the system enables you to perform electronic editing with digital multi effects.

Selecting Editing Mode

Editing modes

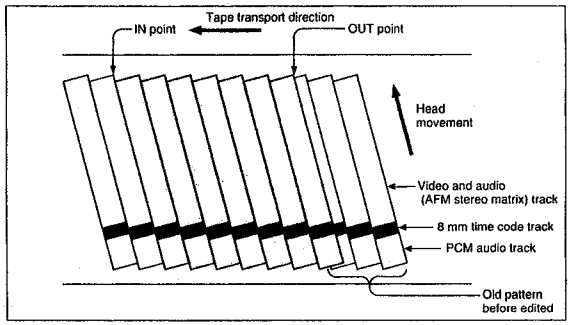
The unit gives you a choice of two editing modes: assemble mode and insert mode.

Assemble mode

New scenes are added to the end of existing recorded scenes. Video signal with the AFM audio signals, 2-channel PCM audio signals and 8-mm time codes are transferred at the same time.

Notes

- Use the assemble mode when using a new tape or if you wish to record onto a tape on which signals are not recorded continuously.
- In assemble mode, recording continues for a certain distance beyond the edit out point. This means that previously recorded information beyond the edit out point will be erased. Use the insert mode if you wish to insert material into a prerecorded tape.



Tape pattern in assemble mode edit

Chapter 5

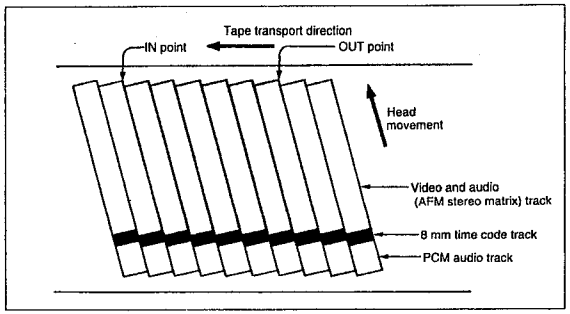
Kinds of Editing (Continued)

Insert mode

A segment of new material is inserted into the tape at a predetermined point. Video signal with AFM audio signals, PCM audio signals and 8-mm time codes can be transferred separately or at the same time. Insert mode editing is a convenient way of replacing the video or audio contents of a certain segment of the tape, or to add narration or background music to previously recorded material.

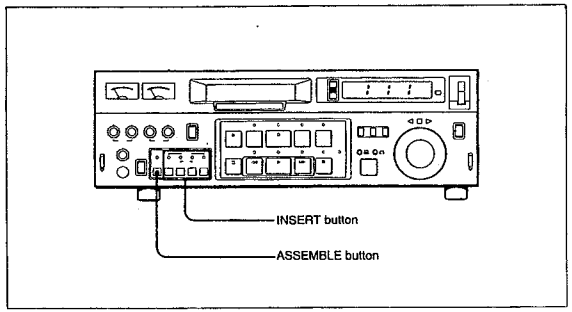
Notes

- AFM audio signals are recorded on the same track as the video signal. Thus, you cannot record the video signal and AFM audio signals separately.
- When recording the PCM audio signals or 8-mm time code in insert mode, the noise may appear on the played-back picture or AFM sound. This is not trouble. Video signals and AFM audio signals are maintained as they were.



Tape pattern when inserting the video signal with AFM audio signal only

Selecting edit mode



Controls for selecting edit mode

To edit in assemble mode
Press the ASSEMBLE button.

To edit in insert mode
Press one or more of the INSERT buttons—VIDEO, PCM CH-1, PCM CH-2 and TIME CODE—to select the input signals to be recorded.

Note on editing in standard 8-mm mode
The unit is designed for business-use Hi8 editing. You can, however, edit in standard 8-mm mode, too. When performing insert editing in standard 8-mm mode, perform audio insert editing and video insert editing separately. If you perform video insert editing and audio insert editing at the same time, the audio noise may occur when playing back the edited cassette.

Automatic Editing

You can perform automatic editing by setting up a system with other VTRs and a Sony editing control unit such as the RM-450CE or BVE-600. In addition, by adding the Sony DME-450P digital multi effects system to the system, you can perform electronic editing combined with special effects. In this case, you must use two or more VTRs. The EVO-9850P is used as the recorder in the system. As the player VTRs, you can use another Hi8 VTR, Betacam SP VTR, or U-matic VTR.

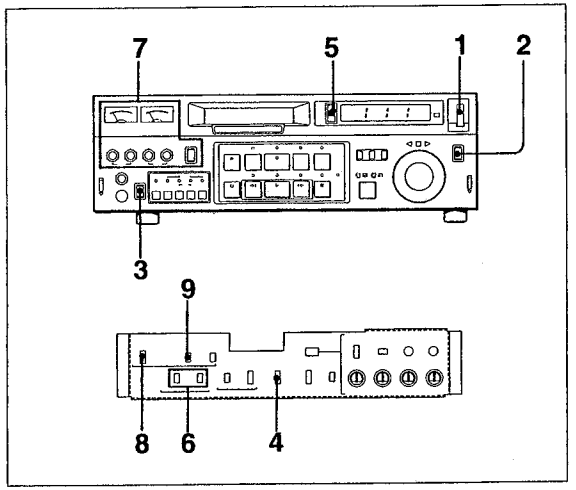
For details of system connection, see "Editing System Connections" on page 3-8(E) in Chapter 3 .
For details of reference signal connection, see "Reference Signal Connections" on page 3-13(E) in chapter 3 .

Before Starting

During automatic editing with the RM-450CE and two VTRs, the RM-450CE remotely controls the two VTRs. On the EVO-9850P, you can only turn the power on or off, select the input signal and adjust the audio signals. All editing operations are performed from editing control unit.

Switch settings and adjustment for a recorder

To use the unit as a recorder, make the following settings.



Setting and adjustment to use the unit as a recorder

1 Set the POWER switch to ON.

2 Set the REMOTE/LOCAL switch to REMOTE.

3 Set the MODE SELECT switch to EDIT.

4 Select the input signal with the INPUT SELECT switch.

5 Set the time counter display switch to COUNTER or TC.

6 Select the audio track to record with the PCM/AFM INPUT SELECT switches.
For information on selecting the audio track, see "Selecting the audio recording system" on page 4-4.

7 While playing the tape back on the player, adjust the audio recording level with the AUDIO LEVEL controls.

8 Set the EXT/INT switch to INT PRESET.

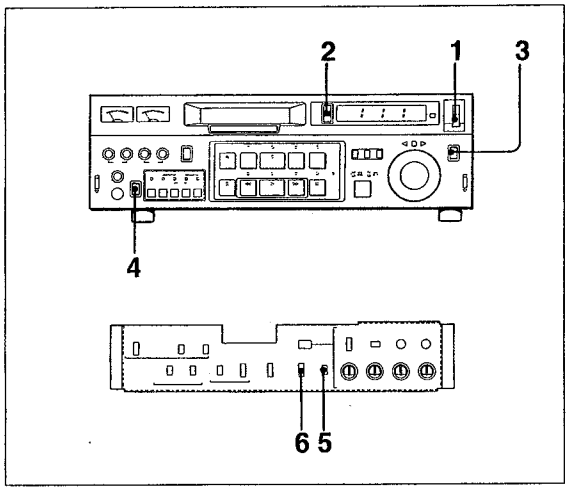
9 Set the FREE RUN/REC RUN switch to FREE RUN.

For more information about setting this unit for use as a recorder, see page 4-3(E).

Automatic Editing (Continued)

Switch settings for a player

To use the unit as a player, make the following settings.



Settings and adjustment to use the unit as a player

1 Set the POWER switch to ON.

2 Set the time counter display switch to COUNTER or TC.

3 Set the REMOTE/LOCAL switch to REMOTE.

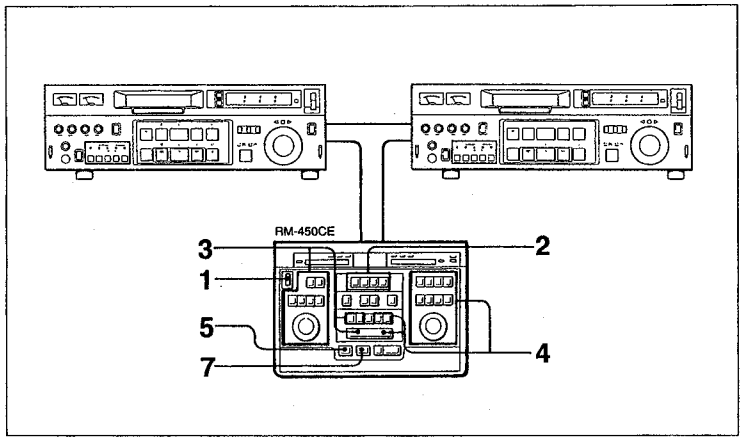
4 Set the MODE SELECT switch to NORMAL.

5 Set the VIDEO PRCS switch to EDIT.

6 Set the DUB OUT switch when editing with the DUB OUT connector.
8 mm: Set the switch to this position when connecting another Hi8 VTR.
U-LOW: Set the switch to this position when connecting a U-matic VTR for recording in low-band mode.
U-HIGH/SP: Set the switch to this position when connecting a U-matic VTR for recording in high-band mode or an SP mode.
For more information about setting this unit for use as a player, see page 4-10(E).

Operations for Automatic Editing

To perform automatic editing by using the RM-450CE Sony editing control unit, proceed as follows.



Automatic editing using the RM-450CE

1 Turn on the power of the RM-450CE.

2 Set the edit mode.

3 Set the IN and OUT points on the player.

4 Set the IN point on the recorder.

5 Press the PREVIEW button to rehearse the edit.
To modify an edit point, use the TRIM button on the RM-450CE.

6 Repeat steps 3 through 5 until you have set all necessary edit points.

7 Press the AUTO EDIT button to execute the edit.

For details of how to operate the RM-450CE, refer to the instruction manual provided with the unit.

Chapter 5

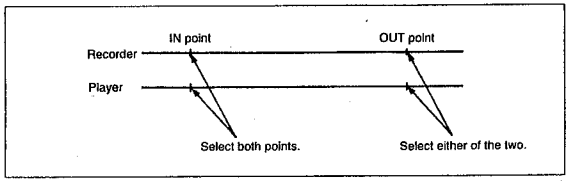
Automatic Editing (Continued)

Confirming an executed edit

After editing, press the REVIEW button. The part just edited is played back for confirmation. Then, the tape stops at the edit out point.

Edit points

For four edit points (IN and OUT points on the recorder and player), two IN points and either of the OUT points should be set by the operator. The remaining OUT point is set automatically.



Automatic setting of edit points

Automatic editing with the BVE-600 or BVE-910

You can use this unit as a recorder for A/B roll editing by making up a system with the BVE-600 or BVE-910. Also, you can add the DME-450P digital multi effect system to perform electronic editing with multi effects. For details, read the instruction manuals furnished with these units.

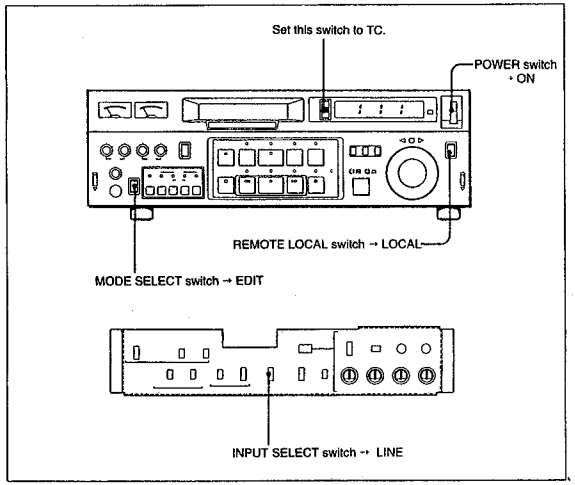
For system connections and reference signal connections, see Chapter 3 "Editing System Connections" on page 3-8(E) and "Reference Signal Connections" on page 3-13(E).

Manual Editing — Editing with the PREROLL button

Editing where you set the edit in point and edit out point manually, without deciding these points beforehand, is called manual editing.
By using the PREROLL button, you can easily record with the unit while editing the signal from a video camera or another VTR.
For details of connections, see "Editing System Connections" on page 3-8(E).

Before Starting

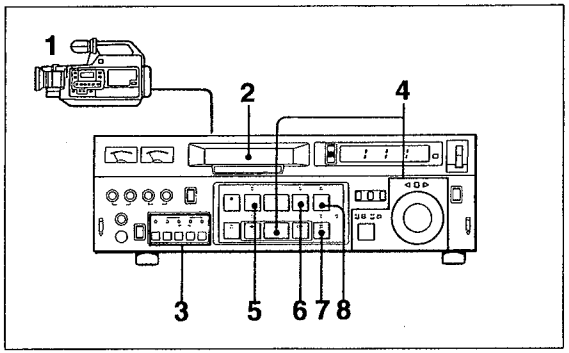
To perform manual editing, set the switches as follows.



Switch settings for editing camera signals

Operation for Manual Editing

To edit signals from a video camera, proceed as follows.



Editing the camera signal

1 Turn on the power of the camera. Adjust the camera as necessary.

2 Insert a cassette.

3 Set edit mode.

4 Play back the tape. Press the PAUSE button at the point where you want to start recording the camera signal (this point is the edit in point).
You can quickly search for a desired point with the search dial.
For information about how to use the search dial, see "JOG and SHUTTLE Mode Playback" on page 4-12(E) in Chapter 4.

5 Press the PREROLL button.
The tape is rewound to a point five seconds prior to the edit in point.

6 Press the EDIT button.

7 Press the PAUSE button.
The tape is played back for five seconds, and the signal from the camera starts to be recorded from the edit in point.

8 Press the CUT OUT button to terminate editing.
The unit stops editing and plays back the pictures in normal playback mode.

To stop the tape running, press the STOP button.

Notes

- When recording playback pictures from a VTR, start playback five seconds or more before the edit in point to allow the tape transport to stabilize.
- If you start editing directly from stop mode or interrupt editing by pressing the STOP button, the picture will be distorted at that point.

Prerolling the tape for editing

The PREROLL button is used to rewind the tape a certain distance from the edit in point, to allow the time for the tape synchronized with another tape.

Note on changing the preroll time

The preroll time for this unit is factory preset to 5 seconds, but can be set to any integral number of seconds between 0 and 15. If you do change the preroll time, however, set it so that the amount of recorded material prior to the first in point is longer than the preroll time.

For more information about preroll time, see the explanation of enhanced menu item 214 on page 3-22(E).

Note

When you start recording from pause mode without using the PREROLL button, the noise may appear at record starting point of the video, audio and time code signals. Use the PREROLL button when starting recording from pause mode.

Chapter 6
Maintenance

This chapter explains error messages and maintenance.

Error Messages ..... 6-3(E)
When an Error Message Appears ..... 6-3(E)
Troubleshooting Guide ..... 6-4(E)
Head Cleaning and Moisture Condensation ..... 6-5(E)
Head Cleaning ..... 6-5(E)
Moisture Condensation ..... 6-6(E)

Error Messages

When a problem is detected in the unit, an error message appears in the time counter display and also on the monitor.

When an Error Message Appears

ERROR-10
Indicates moisture condensation on the head drum.
The AUTO OFF indicator lights and the controls do not function.
For information about moisture condensation, see page 6-6(E).

ERROR-02
Appears in the following cases.
- The tape suddenly stops and the controls do not function.
- The STAND BY indicator is not lit and the unit does not operate even though the indicator corresponding to the pressed function button is lit.

Perform the following.
Eject the cassette and wind up the leader tape manually. Reinsert the cassette and press the function buttons again. If the unit still does not function, turn off the power and contact your Sony dealer.

Troubleshooting Guide

Should you have a problem with your unit, first check the following three items.

1 Check that the AC power cord is firmly connected.

2 Check that the POWER switch is set to ON.

3 Check the connections.
For details of connections, see "Connections" on page 3-4(E).

Next check the unit following the instructions in the table below.

Troubleshooting guide

Symptoms	Possible causes and corrective action
The cassette cannot be ejected.	Turn off the unit and contact your Sony dealer.
The cassette cannot be inserted.	• Insert the cassette with the window facing up. • Check whether another cassette has already been inserted. • Check whether the AUTO OFF lamp is lit. If so, moisture condensation has occurred. See page 6-6(E).
The tape does not move when you press any of the function buttons.	• Check that the REMOTE/LOCAL switch is not set to REMOTE. • Check whether the STAND BY indicator is lit. If so, turn off the power, then turn it back on.
Recording cannot be done.	• Check that the REC indicator is lit. • Check that the tab on the rear of the cassette is set to the original position. • Prepare the program source to record.
Snow or streaks appear on the playback picture.	Clean the video head. (See page 6-5(E).)
Sound is not heard.	Check the MONITOR SELECT switch settings. See page 4-6(E).
Editing cannot be done.	Check that the appropriate edit mode indicator is lit. If not, press the button (which is lit) and press the button corresponding to the desired mode.

Head Cleaning and Moisture Condensation

Head Cleaning

If the picture temporarily disappears or if snow or noise appear on the picture, the video head is probably dirty and should be cleaned.
Clean the video heads with the supplied V8-6CLHSP cleaning cassette. Read the cleaning cassette instructions carefully, as improper use can damage the heads.

Cleaning

1 Insert the cleaning cassette.

2 Press the PLAY button.

3 Let the cleaning cassette run for about 15 seconds, then press the STOP button.

4 Press the EJECT button to eject the cleaning cassette.

Notes

- Do not run a cleaning cassette for more than 15 seconds at a time, nor use it unless the picture quality clearly indicates the need for head cleaning. Excessive use of a cleaning cassette will shorten the life of the heads.
- Do not rewind the cleaning cassette every time it is used. Use the tape to its end. However, do not use that cleaning cassette again. Use the new cleaning cassette.

Video head replacement

If the picture quality is still unsatisfactory after cleaning, the video heads may need to be replaced. The heads have a life of approximately 500 to 1000 hours. With this unit, the total operating time of the heads can be checked with dial menu 205 HOUR METER (DRUM). The data of the hours meter is retained by a built-in battery.
Contact your Sony dealer to arrange replacement of the heads and the battery.

Moisture Condensation

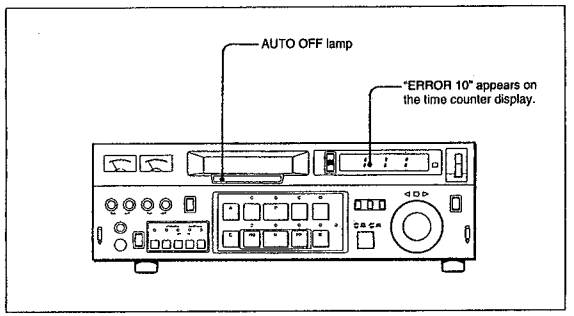
Moisture can condense on the head drum and tape guides when the unit is moved from a cold to a warm location, when the heating turned on in a cold room, or when the unit is placed in a very warm room.
Videotapes played with the unit in this state may adhere to the moistened surfaces. To prevent this, the unit features a condensation detector.

Note

The condensation detector requires about 10 minutes to detect moisture on the drum and tape guides. When using the unit under conditions like those described above, wait about 10 minutes before attempting to turn on the power.

When moisture is detected

If moisture is detected on the head drum during operation, the AUTO OFF indicator on the front panel lights, and the "ERROR-10" message is displayed in the time counter display.



Indications when moisture is detected

As soon as moisture is detected, the drum and capstan motors halt, the cassette is ejected, and the drum begins rotating again. In this state, all unit functions are disabled.
Once the moisture has evaporated, the AUTO OFF indicator goes off and the error message disappears.

If the AUTO OFF indicator lights or the "ERROR-10" message is displayed when power is turned on

Leave the power on, and wait for the indicator to go off and the message to disappear. Cassettes cannot be inserted while the indicator is lit.

If the AUTO OFF indicator does not light and no error message is displayed when the power is turned on

It is safe to begin using the unit.

Appendixes

Specifications ..... A-3(E)
Glossary ..... A-6(E)

Specifications

System

Recording system	Rotary 2-head helical scan Luminance: FM recording Color signal: Converted subcarrier direct recording
Video signal system	CCIR standards, PAL color
Audio recording system	AFM: Rotary head, FM system (matrix stereo) PCM: PCM format (two channels)

Video

Inputs	VIDEO IN (BNC type) x 1 1.0 Vp-p ± 0.3 Vp-p, 75 ohms unbalanced, sync negative S-VIDEO IN (4-pin mini-DIN) x1 Luminance: 1.0 Vp-p ± 0.3 Vp-p, 75 ohms, unbalanced, sync negative Chrominance: 0.3 Vp-p ± 0.07 Vp-p at burst level, 75 ohms, unbalanced DUB IN (7-pin) x 1 for 8 mm video Y: 0.5 Vp-p ± 0.2 Vp-p, 75 ohms, sync negative C: 0.5 Vp-p ± 0.1 Vp-p, 75 ohms, AC coupled (75% color bar red)
Outputs	VIDEO OUT (BNC type) x 1 1.0 Vp-p ± 0.2 Vp-p, 75 ohms, unbalanced, sync negative DUB OUT (7-pin) x 1, 8-mm/U-matic selectable MONITOR TV (8-pin) x 1 MONITOR VIDEO (BNC type) x 1 S-VIDEO OUT (4-pin mini-DIN) x 1 Luminance: 1.0 Vp-p ± 0.2 Vp-p, 75 ohms, unbalanced, sync negative Chrominance: 0.3 Vp-p ± 0.05 Vp-p at burst level, 75 ohms, unbalanced
Horizontal resolution	Hi8 mode recording: 400 lines (both B/W and color) (S-VIDEO signals) Standard 8-mm format recording: 240 lines (both B/W and color)
S/N	Hi8 mode: More than 45 dB (color) Standard 8-mm format: More than 45 dB (color)
Reference video signal input	REF VIDEO IN (BNC type) x 2, loop-through 1.0 Vp-p ± 0.3 Vp-p, 75 ohms, unbalanced, sync negative
Recording level control	Automatic

Specifications (Continued)

Audio

Input	AUDIO INPUT CH-1/L, CH-2/R (XLR 3-pin female) x 1 each (mic/line selectable) LINE: 10 kilohms or more, +4 dBu, balanced MIC: 3 kilohms or more, –60 dBu, balanced AUDIO INPUT CH-3/L, CH-4/R (XLR 3-pin female) x 1 each 10 kilohms or more, +4 dBu, balanced
Output	AUDIO OUTPUT PCM CH-1/L, CH-2/R and AFM CH-3/L, CH-4/R (XLR 3-pin male) x 1 each +4 dBm (at 600 ohm load), balanced MONITOR AUDIO (phono jack) x 1 –5 dBu (at 47 kilohm load) MONITOR TV (8-pin) x 1 PHONES (stereo phone jack) For 8-ohm headphones Level adjustable (from –18 to –46 dB)
Frequency response	AFM: 30 to 15,000 Hz PCM: 20 to 15,000 Hz (for audio channels 1, 2, 3 and 4)
Dynamic range	PCM: More than 80 dB
Wow and flutter	Less than 0.005 % RMS
Recording level control	Manual

Other functions

Sync system	Automatic switching between internal and external
Dropout compensator	Built-in
Remote control	REMOTE 1 (9-pin) x 1 Conforming to RS-422A TBC REMOTE (D-SUB 15-pin) x 1

Tape transport

Tape speed	20.05 mm/s
Recording and playback time	About 90 minutes (with E5-90/P5-90: only SP mode)
Fast forward and rewind time	About 3 minutes (with E5-90/P5-90)
Pause	A still picture is obtained with long pause function
Search	Still, 1/20 to 13 times normal speed in the forward direction and 13 times normal speed in the reverse direction
Usable tape	For business use: E5-HMEX, P5-HMPX

E5-HME, P5-HMP, P5-MP series and equivalent
Do not use home-use cassettes 120 minutes or more.

General

Power requirements	220 to 240 V AC, 50/60 Hz
Power consumption	60 W
Operating position	Horizontal (up to 20 degrees)
Storage temperature	–20°C to +60°C (–4°F to 140°F)
Operating temperature	+5°C to +40°C (41°F to 104°F)
Dimensions	424 x 146.5 x 452 mm (w/h/d) (16 3/4 x 5 7/8 x 17 7/8 inches) not including projecting parts and controls
Weight	About 14 kg (30 lb 14 oz)
Supplied accessories	AC power cord Cleaning cassette Operating instructions

Recommended video equipment and accessories

EBU time code input/output board EVBK-110
TBC remote control unit BVR-55P
33P editing interface BKU-703A
Rack mount kit RMM-980
Editing control unit RM-450CE, BVE-600, BVE-910,
RM-440 (when the BKU-703A installed)
Digital multi effects system DME-450P
Audio mixer MXP-290/VSP-A600
Multi remote control unit RM-555 (when BKU-703A installed)
Remote control unit RM-500, RM-580 (when the BKU-703A installed)
Video and audio switcher BVS-500
VTR selector RM-V5
Color video monitor Sony CVM and PVM series
Color video camera Sony DXC series
Remote control cable RCC-5G (9-pin), RCC-5F (33-pin)
Dubbing cable VDC-5 (5 m)
Monitor connecting cable VMC-3P (3 m), VMC-5P (5 m), VMC-10P (10 m)
S-VIDEO connecting cable YC-30V (3 m), SYC-2 (2 m) / 5 (5 m)
Cleaning cassette V8-25CLH

Design and specifications are subject to change without notice.

Glossary

A/B roll editing
An edit in which two or more players are used to create special effects such as dissolve and wipe, and one recorder is used to record the results of the edit.

AFM recording
Abbreviation of audio Frequency Modulation recording. An audio signal is frequency-modulated and recorded on the video track together with a video signal, enabling multi-channel audio recording and better audio reproduction.

Assemble editing
An edit mode for adding new scenes to the end of the existing recorded scenes. In this mode, all of the video, audio and tracking signals are newly recorded. For the tape control prior to edit start point, the VTR uses the tracking signal already recorded together with video signal. At the edit start point, the VTR starts recording new tracking signal together with video signal. Continuity of tracking signals at the edit point is maintained electrically.

Bridge connection
A method of connection in which a signal is input and output through a unit and is connected to another unit.

Composite video signal
A signal that consists of video (luminance and color sub carrier), sync (horizontal and vertical), and color burst signals.

Condensation
Condensation of moisture on the tape transport mechanisms. Moisture condensation on the drum might cause malfunctions.

EBU
Abbreviation for European Broadcasting Union. A professional broadcasting establishment in Europe.

EE mode
Abbreviation of Electric-to-Electric mode. The input signals which pass through the recorder's electronics are supplied from the output connectors.

8-mm time code
Signals that are recorded between the PCM tracks and the video track, conforming to 8-mm video and Hi8 format. Like the LTC (longitudinal time code), it supplies information such as the hour, minute, second and frame of each frame or user bits.

External synchronization
Synchronization of the signals and tape transport of a VTR with those of a reference VTR.

Insert editing
An edit mode for inserting new scenes into the middle of existing recorded scenes. In this mode, video or audio signal can be recorded separately. The recorder uses the tracking signals already recorded on the recorder tape. In 8-mm video system, however, the tracking signal is multiplexed with video signal and is newly recorded when video signal is inserted. For tracking control in insert edit, a pre-read head reads already recorded tracking signals. In other words, tracking signals must be recorded throughout the porition where insert editing is to be performed. Before editing, therefore, VBS signals must be recorded over the entire length of the recorder VTR.

LTC
Abbreviation of Longitudinal Time Code. A time code recorded along the tape: the same direction in which the tape runs.

Luminance signal
A signal that determines the brightness of the picture. Also called the Y signal.

PCM recording
Abbreviation of Pulse Code Modulation recording. The audio signal is converted to a digital signal and then recorded to the tape. PCM recording enables high quality sound with less distortion to be recorded and played back. This audio signal is recorded onto the tape's PCM tracks, so that you can later record an audio signal onto the PCM tracks of the tape where an AFM audio signal and video signal have already been recorded.

Preroll
Running of a videotape to a point prior to an edit-start point to enable the tape to reach a steady speed and to be synchronized with other video tapes.

Reference video signal
A video signal used as a reference for synchronization of video equipment.

Search
Viewing the picture or time codes by running the tape in fast forward or rewind mode, in order to search for a particular scene.

Servo
A mechanism that controls the number and phase of revolutions of the head drum, capstan, or reel tables. Servo mechanisms allow recording and playback of the video signal without guard band noise. The reference signal of the servo control is normally vertical sync signal.

Servolock
Synchronization of drum rotation and tape speed with a reference signal.

Glossary (continued)

SMPTE
Abbreviation of Society of Motion Picture and Television Engineers, a professional association established in the U.S.A.

S-video input/output connector
A connector for inputting/outputting Y (luminance) and C (chrominance) signals separately. Transferring a video signal in this separate form reduces interference between Y and C signals and helps reproduce noiseless images.

Sync signal
A reference signal consisting of vertical and horizontal sync signals used for synchronizing the scanning patterns of the video camera and the monitor.

Time Base Corrector (TBC)
Electronic circuits to electrically stabilize the playback signals by removing color variation and roll in the playback picture caused by irregularity in drum rotation and tape movement. Time base correction reduces deterioration of picture quality when transmitting or copying playback signals.

Time code
The signals on the tape that are used as a reference of time and frame of the video signals. The SMPTE time code is applicable to NTSC system and the EBU time code is applicable to PAL/SECAM systems.

Time data
Time information that is generated by a time code generator or read by a time code reader.

User bits
A 32-bit section of the time code in which you can record your desired data (supplementary information of the time code), such as year, month, date, and reel numbers.

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